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1902/23

REPORT

OF THE

DEPARTMENT OF MINES

NOVA SCOTIA.

FOR THE YEAR ENDING SEPTEMBER 30, 18[illegible]

[illegible]

REPORT

OF THE

DEPARTMENT OF MINES,

NOVA SCOTIA,

FOR THE YEAR ENDING SEPTEMBER 30, 1896.

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DEPARTMENT OF MINES.

REPORT FOR THE YEAR ENDING SEPTEMBER 30, 1896.

To His Honor MALACHY BOWES DALY, *Esquire, Lieutenant-Governor of Nova Scotia, &c., &c.*

MAY IT PLEASE YOUR HONOR,—

I respectfully present herewith to Your Honor the Annual Report of the Inspector of Mines, containing an account of the progress of mining operations, together with statistical information compiled by him from official and other returns.

I remain,

Your Honor's obedient servant,

CHARLES E. CHURCH,

Commissioner of Public Works and Mines.

HALIFAX, *December 7th, 1896.*

REPORT

ON THE

MINES OF NOVA SCOTIA,

BY EDWIN GILPIN, JR., A. M., LL. D.,

FELLOW OF THE ROYAL SOCIETY OF CANADA.

OFFICE OF INSPECTOR OF MINES,
HALIFAX, *December 4th, 1896.*

TO THE HONORABLE
CHARLES E. CHURCH, M. P. P., M. E. C.,
Commissioner of Public Works and Mines:—

SIR,—I beg leave to submit the following report on the Mines of Nova Scotia.

The following summary shows, so far as I have been able to learn, the mineral production of Nova Scotia for the year ending September 30th, compared with that for the year ending September 30th, 1895:

		Year ending Sep. 30, 1895.	Year ending Sep. 30, 1896.
Gold	oz.	22,112	25,596
Iron Ore[*][†]	Tons	79,636	56,334
Manganese Ore[†]	"	110	129
Coal raised[†]	"	2,089,245	2,235,472
Coke made[†]	"	41,497	58,741
Gypsum[†][‡]		133,300	130,489
Grindstones, etc[§]		17,189	30,317
Limestone[†]	Tons	30,176	31,171
Copper Ore[†]	"	......	10
Graphite[†]	"	......	175

---

[*] Not including imported ore. (See end of Report.)
[†] Ton of 2,240 lbs.
[‡] Amount exported.
[§] Value in dollars.

During the past season the operations of the Department hav been carried on as usual.

Since last annual report Certificates have been issued to collier officials as follows:

P. W. McNaughton,	Joggins,	Manager.
J. W. Sutherland,	"	"
Richard C. Brown,	Sydney Mines,	"
R. Anderson,	Old Bridgeport,	"
P. Christiansen,	Dominion No. 1,	"
Jno. Carey,	Sydney Mines,	"
Isaac Greenwell,	Sydney,	"
R. Archibald,	Joggins,	"
Jas. Purvis,	Bridgeport,	U. Manager.
John Moffatt,	Dom. No. 1,	"
D. I. Merlin,	Glace Bay,	"
J. Dorsay,	Sydney Mines,	"
Neil A. Nicholson,	Glace Bay,	"
Alex. McKinnon,	Cow Bay,	"
D. K. McVicar,	"	"
Jno. Ferguson,	Reserve Mines,	"
Jno. Gray, Sr.,	Westville,	"
Jno. Gray, Jr.,	"	"
Jno. D. Keith,	"	"
E. P. White,	"	"
J. A. Roy,	"	"
J. D. Maxwell,	"	"
Jas. Murphy,	Springhill,	"
D. McSaveney,	"	"
Michael Morrison,	Glace Bay,	Overman.
J. McLean,	Victoria,	"
J. A. Boutlier,	Dom. No. 1,	"
P. Carrell,	Victoria,	"
W. Guthro,	Old Bridgeport,	"
Rod. McIntyre,	Victoria,	"
Thos. Matheson,	"	"
A. A. Ferguson,	Reserve Mines,	"
A. Mitchell,	Stellarton,	"
J. Workman,	Westville,	"
J. R. McLean,	Thorburn,	"
M. Beaton,	Westville,	"
W. T. Chen,	"	"
P. McKay,	Springhill,	"
A. Sutherland,	Thorburn,	"

An examination for granting Certificates to Engineers (person employed where men are raised and lowered in or out of the mine b means of machinery) was held during the past year, and the followin rtificates issued:

J. Brophy,	Springhill,	First Class.
R. Groggert,	"	"
A. J. Campbell,	Westville,	"
W. G. Fraser,	"	"
I. S. Price,	Springhill,	Second Class.
Jno. Wilkes,	Westville,	"
A. McNeil,	N. Sydney,	"
I. Hemsworth,	Westville,	Third Class.
Alex. McLean,	Sydney Mines,	"
D. Brophy,	Victoria.	"
H. Kay,	Sydney Mines,	"
J. Neville,	Old Bridgeport,	"
L. E. Lockman,	Sydney Mines,	"
N. McIsaac,	Victoria,	"
D. McPherson,	Old Bridgeport,	"
D. M. Ferguson,	"	"

The local Colliery Boards for granting Certificates to miners and shot firers have continued during the past season.

When opportunity has offered, the collection of Nova Scotia minerals at the Imperial Institute, London, has been improved, the most notable contribution during the year being a fine set of samples of Gypsum from Port Bevis, Victoria County, procured through Mr. W. F. McCurdy from the Victoria Gypsum Company.

During the past year a large number of surveys have been made in the Stormont and Wine Harbor district by Mr. C. W. Pye. Surveys were made at Pleasant River, S. Uniacke, Mill Village, Block House, Brookfield, Montague, Scraggy Lake and Renfrew.

The new district of Cow Bay, Halifax County, was laid out and base line located. The survey at Mooseland by Mr. C. F. Anderson included a report on the land held there by the Government. At Tangier a commencement has been made of the work of laying it out in regular areas, instead of the former small and irregular areas.

COAL TRADE.

The coal trade returns for the twelve months ended September 30, as compared with the fiscal year 1895, are as follows:

	1895.		1896.	
Nova Scotia	633,041	Tons.	666,403	Tons.
New Brunswick	228,525	"	252,293	"
P. E. Island	81,492	"	94,236	"
Newfoundland	63,232	"	63,000	"
Quebec	740,098	"	795,060	"
West Indies	11,872	"	1,222	"
United States	73,097	"	174,919	"

The production was 2,235,472 tons, compared with 2,089,245 tons in 1895.

The sales show an increase in home sales, although not quite equal to the figures of 1894. The trade to New Brunswick shows a slight increase, as is also the case with Prince Edward Island. The exports to Newfoundland, as was to be expected, remained stationary. The sales to Quebec increased about 50,000 tons, the increase being from Cape Breton. The West Indian sales have been reduced, while the exports to the United States have more than doubled. Further details on these points will be found in the tables at the end of the report.

CUMBERLAND COUNTY.

In Cumberland County the sales amounted to 422,783 tons, compared with 422,210 tons during the preceding year. An increase in the Springhill output was neutralized by a reduction in the sales of Joggins coals. The output of Springhill was last year 411,320 tons; in 1895, 381,032 tons. That of the Joggins was in 1896, 59,125 tons, compared with 110,082 tons in 1895.

At the latter colliery the ventilation has been improved, and other changes made. Operations at the Springhill mines of the Cumberland Railway and Coal Company present no new features of interest. The mines and machinery have been maintained in good order, and the needed extensions and repairs made.

PICTOU COUNTY.

The sales from this county were 351,693 tons, compared with 368,784 tons during the preceding year. The sales to Quebec were 52,987 tons, against 85,250 tons in 1895.

Operations were confined to the Acadia and Intercolonial collieries, producing respectively 198,884 and 196,373 tons.

The operations at these mines and those of Cumberland County are treated in detail in the following report of Mr. William Maddin, Dy. Inspector.

WESTVILLE, N. S., 1st October, 1896.

E. GILPIN, ESQ.,
Dep. Commissioner and Inspector of Mines for the Province of Nova Scotia.

DEAR SIR,—I have the privilege of herewith submitting to you a condensed report on the various mines in the districts of Pictou and Cumberland Counties, for the year ending 30th September, A. D. 1896.

CAPE BRETON.

On August 26th I visited Caledonia Mine, in company with P. Neville, Esq., Dep. Inspector of Mines for Cape Breton. We travelled the east side of the mine, and found the air very much improved since my visit last year. There is now some 80,000 cubic feet of air circulating per minute, and quite a number of stoppings put in to conduct the air to the face of the workings. The mine is comfortably damp and in good condition.

CUMBERLAND COUNTY.

Minudie Mine.—Wm. Hall, Esq., worked this mine a little during the year. The levels were driven in some 300 or 400 ft. and a back balance driven up on each side to the upper level, a distance of 200 ft. There were 4 bords on each balance, making 8 bords and 2 levels, which were worked for a short time. Work ceased in July, and has remained so from that time.

Chignecto Mine.—Three men did some work on the eastern end of the property and raised some samples of the coal, which they shipped to parties who may be bidding for the property.

The Scotia Mine.—Six to eight men were employed here doing a little work during the winter months, and in the summer they came east to the old Scotia slope, and sank a slope in the top coal near the old slope, with the idea of driving the level somewhat flatter, and obtaining a larger hold of the coal. Of late years all the coal taken out of this seam was won by sinking slopes of about 200 ft. each in depth, and then driving back to the water level. Now the management consider that those levels have been run up hill too much, and that by adopting the method I have mentioned they will thereby obtain a larger grasp of the coal.

Smith's Mine, Maccan.—This mine has been kept open all the year, and the water kept out, and some coal taken out. The mine is nicely situated, being only about 20 yards from the I. C. R. line.

Joggins Mines.—In my last report I stated that the water was all out of No. 1 slope except 200 ft., which I hoped to be able to report as out this year. I regret to say, however, that the water was allowed to rise again, and No. 1 slope is again full of water.

No. 2 slope has not been worked since the strike which terminated last March. There was a creep on the slope from the 1300 to the 1900 ft. levels, and during the strike the slope was idle, and since that time had to be repaired between the 1300 and 1900 ft. levels. The roads had to be lifted and relaid, and the slope retimbered so as to permit the boxes to run. The intention is to connect Nos. 2 and 3 slopes for ventilation, drainage and pumping. The pumps are all in No. 2, and it is therefore necessary to keep open the drainage, under these circumstances, between Nos. 2 and 3 to the dip. These slopes are connected at the 1300 ft. level, and the idea is to connect at the 1900 ft. level also. Owing to some recent troubles, the leading places in No. 3 slope have not advanced very rapidly. The levels in the 1900 ft. lift were driven in some 400 ft. The output from this slope is about 300 tons per day, and could be now increased, as the leading places have been advanced considerable during the summer. A new fan has been lately erected, considerably improving the ventilation This fan has no particular name that I am aware of, except being called an open fan. It is 14 ft. in diameter and fitted with 8 blades 3 ft. 6″ × 3 ft. 2″. The orifice of the fan is 7 ft. diameter. It is kep running from 35 to 40 revolutions per minute, giving from 20,000 to 25,000 ft. of air per minute. All the lowest part of No. 2 slope is ful of water up to the 1900 ft. At this point there is a pump set which keeps the water down to this section of the mine. This mine has been idle considerably through the past year, on account of the strike and want of orders.

SPRINGHILL MINES.

No. 1 Slope.—The principal work done in this mine for the pas year has been the continuance of pillar work from 1900 and 2600 ft levels. Considerable expenditure has been incurred in repairing and retimbering the main slope, fan way, and travelling way, the latter o which has been stripped and packed with wooden butts on each sid for 300 ft., making a permanent return. The pipe bord has likewis received considerable attention and, with the exception of a shor distance, is in good condition. On the 1900 ft. level a new pum house has been erected and a new Janesville pump put down capable of throwing or discharging 450 gallons per minute from 1900 to 800 ft. level. Also, a new Janesville pump capable of discharging 150 gallons per minute has been placed at the 2600 level, discharging into the lodgement at 1900 ft. level.

No. 2 Slope.—The drawing of pillars from the 1900 ft. lift has been carried on continuously in this mine for the past season. At the same time the extension of the 3000 ft. lift has been vigorously prosecuted, although the east level shows no large extension, being only a little over 2500 ft., at which point a trouble was encountered and proved to the extent of 35 ft. Considerable headway has been made to the rise; 1100 ft. of narrow work or balance has been driven. A tunnel was driven in the measures from east mine bord 136 ft. cutting the main seam 360 ft. below the old 2600 ft. level, with coal 5′ and 5½′ respectively. The levels have been extended east and west some 400 ft. and connections made with the 2600 ft. lift of No 1 slope. Considerable difficulty and expense have been incurred in No. 2 slope owing to a local trouble in the form of a roll running at right angles to the dip, rendering necessary the grading of the main slope for 150 ft., running from 1 ft. to 13 ft. of solid rock. As a means of strengthening this section, as where the grading was done is very "lipey," scaffolds of railway iron or rails were put in to carry the timber, and the rock taken out of the bottom was put on the scaffolds. The object is to strengthen the sides and prevent a creep. Also, solid packs have been built overhead and rest on the railway metal, making this work permanent. The travelling way pipe-bord and fan-way have also received considerable attention Partly owing to the slackness of trade with other causes, the Guibal fan, made mention of in my last report, was not erected as anticipated. I understand it is now definitely decided that a Capell fan 19 × 5 double inlet will be made by Wm. Clifford. M. E., of Pittsburgh, Pa., and will be erected at this place instead of the fan originally contemplated.

No. 3 Slope.—Since my last report, considerable work has been accomplished in this slope, not only in the drawing of pillars on the 1300 ft. lift, but the 1900 ft. levels have been extended 1280 ft., two balances, Nos. 7 and 8, have been driven through to the 1300 ft. lift, and the 9th is partly driven up at the face or boundary line formed by the management. The main slope, travelling way and fan-way have each been extended 500 ft., and are still being extended. This gives a new lift of 730 ft., or a total distance of 2630 ft. This slope was sunk in the top coal on account of the seam being split by a band of fire clay at the 1900 ft. level and varying in thickness from 5 ft. to 5 ft. 11 in., although as the levels advance west the coal soon regains its normal height of 10′ 0″. The returns have received considerable attention, especially the east side, which was stripped and timbered for 1300 ft., making this not only a good return but a permanent travelling way. On the surface at this slope a new rotary was erected, 130 ft. from the screens. The coal is conveyed to screens by a Jeffery patent roller conveyer. The elevator bucket discharges 84 buckets per minute. Riddle 5 ft. diameter and 23 ft. long, and runs 20 revolutions per minute. Screens consist of 3 bins: one nut bin holds 1½ cars of 20 tons, one stove bin holds 1 car of 20 tons, one culm bin holds 2 cars of 20 tons. The motive power consists of a 12 × 14 Robb Armstrong side crank engine, running at a speed of 150 revolutions per minute. Power is transmitted by a continuous circuit of one-inch manilla rope running over iron pulleys, made by Dodge Manufacturing Company.

A new system for conveying culm to boilers has been erected. It is called the Jeffery patent coal conveyer, and consists of a continuous length of ⅝ steel rope to which is fastened 6″ iron disc scrapers or conveyers placed 3 ft. apart, and when moving at a moderate speed are capable of conveying 20 tons of culm per hour.

PICTOU COUNTY.

FORD PIT.

Last year I reported the fan shaft was built up 50 ft. with brick and made air-tight. This year two levels were started south, one in the top coal and the other in the bottom coal. A place was also driven around the high side of the shaft for an air return. The levels were continued south in the pillar of coal left between the old Bye-Pit and the Ford Pit, until they struck the Marine Slants, so called, from which the water was drawn by a borehole, and the levels advanced under the Marine Slant until the Muir's Slant, so called, was struck by boreholes, and the slants successfully opened and traversed by the management. Then fire-proof stoppings were put in to disconnect the old workings from the Ford Pit workings on the south side. Then stoppings were put in the levels to disconnect them from the fan shaft.

MCGREGOR PIT, ALBION MINES.

This mine is now down a distance of 3600 ft. In my last report I stated that the levels in the new sinking, which was down 2970 ft., were in 900 ft. on the east side and 700 ft. on the west side. Now the levels on east side are in 1760 ft., and the second balance is up for 8 bords, whilst on the west side the levels are in 1643 ft. and 2 balances are driven up to Mine bord above. There has also been a new lift of 600 ft. sunk or nearly completed. This opens up a large area of coal which appears to be getting better as they proceed to the dip. In my last report I further referred to the four ft. seam known as the Fleming seam, overlying the McGregor, as being opened up, and on the west side it was successfully accomplished to about 500 ft. in depth. It is now, however, stopped. It was intended also to open the same seam on the top lift. As yet, this has not been done. There is nothing doing in this mine except the levels being advanced, and in the new sinking, and also the two balances which are nearly finished. The air is, as usual, good and well kept up to the working faces.

THIRD SEAM SLOPE.

In last report I grouped 4 seams together under this heading. I shall not have to deal this year with the Ford Pit seam here, as no work was done on it this year from this side. Very little work has been done in the Third seam except the usual timbering required to keep air-ways open, although, at the present time, preparations are being made to start on the west side of the Third seam. The Deep or Cage Pit seam has produced two-thirds of all the coal taken up this slope.

The sinking in Cage Pit seam, referred to in last report, has been finished, and a lift of 600 ft. to some extent opened up. The levels on west side are in 1000 ft., and a balance nearly up the levels on east side are in 500 ft. and a balance started up. Also, the levels on west side of old workings are in over 3000 ft. and a balance driven up inside the levels in the old Cage Pit workings. The east levels have not been advanced this year, as there were two or three balances up on this side last year which have been worked during this year. Some trouble has been experienced drawing the pillars on the east side, owing to so much idle time after the pillar work was started, thereby causing a great amount more of timbering. The coal is of a strong nature and has not suffered from the squeeze as much as would be expected. It is a trying experiment for the management to draw pillars successfully working one day and idle next. It requires every day to be at work until finished to do justice to mine and management. The ling-wall referred to in last report is finished for a time, so that the Cage Pit seam and likely the west side of Third seam will be the chief source of supply here for the next year. The new air-ways, referred to in last report, are stopped. The air is very good in these different seams. The new fan is now running and giving good satisfaction.

THE SIX FOOT SEAM, THORBURN.

The work has been very dull here for the past year, and the workings in consequence have not been advanced far. All the work was done in the Basin, which runs north-east by south-west, and last year, or rather the year preceding, the coal was taken principally from the east side in the trough or Basin, but this last year the management started on the west side, and every foot they went the coal thickened, until they have now 5 to 6 ft. of good coal on this side. The levels on this side have been advanced and a balance driven up for 8 bords. There is a place in the middle where the coal is thin. There is another balance started up on the same side, so that the life of the Six Foot Seam has been materially lengthened by advancing the west side levels, which are in 600 ft. and still being advanced. The east side is much the same as last year. The coal runs from 3′ to 8′ and looks fully better to the dip. A new balance has been started on this side. It is not quite up. It looks very well. The ventilation is very good in this mine. I might state that J. W. Sutherland, manager of this mine, resigned to take charge of an iron mine for the Steel Co., and James McIntosh, underground manager, is now manager of this mine.

ACADIA MINE, WESTVILLE.

Last year I reported the south level on the 4000 ft. lift as being in a distance of 2490 ft. It is in now 3400 ft. and is stopped, it being as far as they are going on this side. There are 3 places up to the 3600 ft. lift, and every 280 ft. there are places driven up 150 ft. and connected for air returns. The intention is to work out the coal from the top down to these places, keeping those places that are open for the last, so that about two-thirds of the coal at upper part of lift will be taken out first, and the lower part last. It is understood that all the work done in this mine is carried on butts or packs. This is the deepest mine in Nova Scotia. There is nearly 1800 ft. of cover over them, and they are sinking another lift of 350 ft., which is nearly completed, and when done the cover will be about 2000 ft. The levels on north side are now in 2500 ft. and still being advanced. The angle or pitch of the coal on this side is 40°. Still, the coal is taken out of the top part first, holding one-third solid to bring back. There are 4 places up through in the 3600 ft. lift. Very little trouble has been experienced with the main slope and travelling slope since the packs were put in. The return air-ways are giving as much trouble as usual, yet the air has been much better this year than last. The new sinking is carried on packs, and the coal maintains its uniform good appearance and quality, and things in general in this mine look very well.

DRUMMOND COLLIERY, WESTVILLE.

In my last report I stated they had started to draw the pillars in the 4000 ft. lift. The levels being in to the line on the north side and the coal being somewhat coarse on south side, those levels were stopped also, and the work of bringing back the pillars commenced on both north and south sides. The north side pillars have been drawn very well so far. The coal has been won with very little trouble and got wonderfully clean out, while on the south side the management have had considerable trouble in getting the pillars on account of a squeeze or creep which has come down on the levels, although there is 100 ft. of coal between the main level and the broken. The weight is coming over this and giving great trouble. Still, with wooden packs such as they are using, they may succeed in holding it until the coal is got from the inside. The levels on the 4400 ft. lift are in on the south side 2780 ft. and on the north 2540 ft. There is a back balance up on the south side to the 4000 ft. lift and another nearly up. Also, a back balance up on north side and another being driven up. It is probable that some coal will be taken down from the 4000 ft. lift to the 4400 ft. lift on the south side, as there are considerable quantities of coal in there yet, although there are some bands or partings of bed coal, yet there are some very good coal left in, which will likely be won in the near future by the 4400 ft. lift. On the south side there still remains 1100 ft. of solid coal at the 4000 ft. lift between the working face and the slope. On the north side there are 1500 ft. of solid coal standing between working face and main slope. The water is now pumped from this mine by means of compressed air instead of steam—two 14 × 22 duplex Rand compressor Myers adjustable cut-off. It is undoubtedly an improvement on steam. In last report I spoke of a new revolving tipple and picking belt. This has been duplicated by another obtained from I. Matheson & Co., of New Glasgow, and it is an improvement on the first. The tipple, more especially, is constructed so as to take a box with 15″ of pitchings on or only level full. The water to supply the mining plant and for all other general purposes around the mine is obtained from the water system lately constructed by the Town of Westville, and there are hydrants at various places in the yard. Everything looks well in and around the mine, except the trouble on the south side with the pillars, which is carefully attended to.

I have the honor to remain,

Yours very faithfully,

WM. MADDIN, Jr.,
Dep. Inspector of Mines.

Date of Official Inspections. (Coal Mines.)

MINE.	COUNTY.	1895.			1896.								
		Oct.	Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.
Springhill Mines No. 1	Cumberland	11	5	2	7	6	20	16	12	16	28	....	3
Springhill Mines " 2	"	11	5	2	7	6	20	17	12	16	28	....	3
Springhill Mines " 3	"	12	6	3	8	7	21	16	11	17	29	....	4
Joggins Mine, No. 2	"	7	7	4	9	8	23	18	8	18	30	....	5
Minudie Mine	"	8	8	4	10	8	23	Idle.	9	19	Idle.	....	....
Chignecto Mine	"	9	8	5	11	9	Idle.	20	7	19	Idle.	....	....
Scotia Mine	"	9	9	5	11	9	Idle.	20	7	19	Idle.	....	....
Joggins Mine, No. 3	"	8	7	4	8	8	23	18	8	18	30	....	5
Smith Mine, Maccan	"	10	9	5	11	9	24	20	9	20	Idle.	....	5
Drummond Colliery, Westville	Pictou	15	16	10	16	13	10	1	5	2	21	4-21	14
" " No. 4	"	15	Idle.	....	....	....	....	....	....	....	....	....	....
Acadia Mine, Westville	"	19	18	19	18	22	....	4	6	....	25	20	18
McGregor Pit, Stellarton	"	16	13	14	20	12	11	2	15	3	22	5	11
Third Seam, "	"	18	12	13	21	....	12	6	16	4	23	19	9
Ford Pit, Fan Shaft, Stellarton	"	....	25	....	21	....	....	....	....	....	....	....	....
Six Foot Seam, Thorburn	"	22	27	21	14	....	16	7	23	6	....	3	17
Bridgeville Iron Mines	"	....	....	....	....	....	....	....	13	....	....	....	....
Board of Examiners	....	....	....	....	....	....	....	....	3days	....	....	....	....
Gold Mines—Eastern Section	....	....	....	....	....	....	....	....	....	30 to	17	....	....
" " West "	....	....	....	....	....	....	....	....	....	....	....	1-18	....
Caledonia Mines	Cape Breton	....	....	....	....	....	....	....	....	....	....	26	....

ACCIDENTS.

No.	Date.	Mine.	Name.	Occupation.	Remarks.
	1895.				
1	Oct. 8	No. 1 Slope, Springhill	William Milburn.	Cage runner.	Fatally injured, thrown from cage.
	1896.				
2	Jan. 17	" 3 " "	William McMillan.	Loader.	Struck by empty box.
3	" 25	" 1 " "	John McLeod.	Miner.	Hurt by fall of roof stone.
4	" 25	" " "	William Cox.	Miner.	Hurt by fall of roof stone.
5	Feb. 8	" " "	Walter Wright.	Shover on.	Arm broken between two boxes.
6	" 24	" 3 " "	Lawrence Gallant.	Shiftman.	Killed by runaway in slope.
7	" 20	" 3 " Joggins.	James Hubio.	Miner.	Leg broken by fall of stone from roof.
8	Mar. 4	" 1 " Springhill	Arnold Ernest.	Driver.	Hurt, by pump falling on him, which was knocked out by the rake.
9	Apl. 21	" 3 " "	Walter Noiles.	Shover on.	Collar bone broken, empty rake striking him.
10	May 11	Bridgev'le Iron Mine	Duncan Murray.	Miner.	Fatally injured by a piece of ore falling on him.
11	July 10	Drummond Colliery.	Nicholas Farier.	Bankhead man.	Crossing the coal conveyer, his leg got caught, and was so severely injured it had to be amputated.
12	" 4	" "	J. W. Munro.	Miner.	Back and legs hurt by fall of coal in pillars.
13	" 9	Third Seam.	Alex. Hay.	Comp'y's man	Foot injured in a collision in the slope.
14	" 31	No. 3 Slope, Springhill	Law'nce Chisholm.	Cage runner.	Ribs broken.
15	Aug. 25	Drummond Colliery.	Thomas Gray.	Boy.	Arm broken while coupling boxes.
16	" 29	" "	James Hamilton.	Cage runner.	Ribs broken, struck by balance box.

Amount of Air circulating per minute in the Underground Collieries, as per measurements at each official visit.

MINE.	COUNTY.	1895.			1896.								
		Oct.	Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.
Springhill Mines. No. 1	Cumberland.	63500	62000	64000	70400	71000	70400	60700	62000	46200	47800	......	40800
No. 2	"	60100	60300	61000	61200	62000	69700	72400	72000	60800	61200	......	60000
No. 3	"	30000	50000	44000	47000	50000	56700	56500	55000	59780	62700	......	70500
Joggins Mine, No. 2	"	22000	24000	27000	30000	Idle.	26000	Idle.	......		.....	......	24000
Minudie Mine......	"	1000	1000	1200	2000	1700	1500	Idle.	1000	Idle.	......	......	......
Chignecto Mine....	"	700	600	1000	1500	1000	700	Idle.	Idle.	......	......	......	......
Scotia Mine.......	"	700	500	1000	1000	1000	600	Idle.	Idle.	......	......	......	......
Joggins Mine, No. 3	"	19000	2000	30000	32000	32000	30000	28200	16700	13000	13300	......	22900
Smith Mine, Maccan	"	900	1000	1400	16000	1000	1100	800	770	900	500	......	500
Drummond Colliery	Pictou.	130000	110000	11000	86000	87500	89725	88500	86800	132000	98000	99000	98600
" No. 4.	"	30000	Idle.	......	......	......	......	......	......	......	......	......	......
Acadia...........	"	72000	71700	73400	72500	64000	......	64100	62400	60100	40700	59700	61800
McGregor Pit	"	102000	101260	122340	96000	97400	104970	100750	113000	10000	96128	99900	97500
Third Seam.......	"	50000	47600	60000	46000	64300	66400	67200	64700	65000	53312	54000	55100
Six Foot Seam	"	19500	19000	20000	21500	19700	21000	20000	19800	20000	......	18600	24000

Timber and Explosives used from Oct. 1st, 1895, to Oct. 1st, 1896.

MINE.	PROPS.	BOOMS.	EXPLOSIVES.					
	Feet.	Feet.	Powder, lbs.	Flameless Powder, lbs.	Dynamite, lbs.	Roburite, lbs.	Fuse, ft.	Squibs, doz.
Acadia	48,000							
Albion	132,000	69,000		16,400	300	20,000 Detonators		
Vale	31,662	47,750	37,866					700
Drummond Colliery	389,675	246,349	Pit sleepers, 13,646 pcs.			56	519	
Joggins Mines	98,066 Sleepers, 1.416	2,527 Boards, 15,250	7,125		30			

STATEMENT.

Timber used at Springhill Collieries from October 1, 1895, to Sept. 30th, 1896.

BOOMS :—

22'x12"	18'x13"	14'x10"	14'x6"	12'x9" and 10"	10½'x9"
2	25	2610	27463	3323	3984

PROPS :—

12'x5"	10'x5"	5½'x5"
33782	24116	36828

Pine		11,997 feet.
Plank	Spruce	127,927 "
Boards		189,638 "
Scantling		180,605 "
Timber		127,062 "
Hardwood		64,923 "
Pit Pinning		1,307½ doz.
Slabs, 6'		5,055 "
Cap Pieces		60,735 "
Rollerwood		17,000 "
Dynamite		879 lbs.

September approximated.

CAPE BRETON COUNTY.

The sales from this county amounted to 1,257,362 tons, against 1,031,341 tons in 1895. The coal produced came from the works of the Dominion Coal Company and of the General Mining Association; viz., respectively, 1,079,198 and 265,142 tons.

The sales to Quebec were 662,264 tons, compared with 573,633 tons during the preceding year.

The operations at the various mines are described by Mr. Neville, Deputy Inspector. I beg leave to draw your attention to the remarks made by him on the system prevailing in this county of leaving a large amount of coal in the pillars. In the counties of Pictou and Cumberland the practice is the reverse, and in many cases the amount of pillar coal ultimately lost is very small. There it is, as a rule, systematically extracted, and this is considered to leave the mines in a better and safer condition than the practice of allowing acres of roof and stone to hang upon pillars.

The amount of coal already lost in Cape Breton in pillars in the various mines is very large, and extensive areas are now standing in pillars. The attention of operators should be directed to this point, and unless good reasons intervene, steps should be taken to extract as much of the coal as possible, in practically one operation.

It may be objected that the amount of water to be pumped would be very much increased by extracting the pillars, and letting the roof down. It must, however, be remembered that when small pillars are left between wide rooms, that sooner or later the roof falls and the water is ultimately admitted, without the opportunity of getting any of the pillar coal.

BRIDGEPORT, Oct. 15th, 1896.

E. GILPIN, JR., ESQ.,
Deputy Commissioner and Inspector of Mines.

DEAR SIR,—I beg leave to forward to you a report on the coal mines in Cape Breton for the year ending September 30th, 1896.

CALEDONIA.

Endless haulage system has been fully installed in all the main roads, viz., west level, east and west deeps, and east level. For this purpose the approaches to the pit bottom and bank heads have been graded and the whole of the coal is delivered in the east side of the shaft, the empties discharged on the west. Electric signals have been put in and also electric light around the pit bottom, and for a considerable distance along the main haulage road. To work this system of haulage a 24"×48" horizontal engine has been fixed upon the surface with three sets of friction gear, each working a main hauling rope, all under the control of one operator. A new engine house covered with galvanized iron has been erected. Below ground a compound duplex pump, supplied by the Northy Manufacturing Company, has been put in. This pump has a capacity of 1000 gallons per minute, and forces the whole of the water of the mine to the surface.

A new deep has been driven across the pillars from a point about 400 feet down the old west deep, coming out on old No. 4 west level. This is to win the coal lying to the west of No. 3 and No. 4, and to avoid the fall which took place in the workings in this district two years ago.

The main west level has been extended about 300 feet, No. 4 east 1000 feet, and No. 4 west 600 feet. In No. 3 west deep level gas was reported on the report book on four consecutive days in one week in the latter part of August; this I reported to you, and by your advice pointing out that section of the law no shots have been fired in that section of the pit since. Also the west high level district where the air was dull, as you suggested when there in July last, the airway has been enlarged and will soon be finished to the end of the level, giving more freedom to the air returning to the fan. Also No. 5 east district, which you considered rather dry and dusty when there, is now well ventilated and much damper, the air being increased from 70,000 to 90,000 feet per minute.

RESERVE MINES.

The lower south level on the French slope has been extended 1000 feet, the upper south level 500 feet, and the headway 800 feet in length driven to connect the same. The level to the north of the French slope has been extended 600 feet, the main slope has been driven down 1000 feet and rooms broken off this lower recovery.

The air on this side of the pit was found to be very dull during the months of June and July. However, in the month of August a ventilating fan from Little Glace Bay pit has been removed and set up above, where the west furnace was improving the ventilation considerably.

The company have ordered a large fan from England, capable of circulating 200,000 feet of air per minute; this fan will be erected during the winter months ready for next season's work.

OLD BRIDGEPORT.

The deeps have been driven 1000 feet and a new section of work opened out. The workings to the rise towards the crop have nearly all run out, and are principally confined to the extraction of pillars. Nearly the whole of the output of this mine is now brought from the deep where the coal is thicker and no stone parting as in the upper workings.

A new travelling road has been driven out to the surface a little west of the furnace, which is satisfactory both for workmen and ventilation. The management last year promised to set up a ventilation fan there, but it appears they forgot it. However, they now say that as soon as the big fan arrives at the Reserve they will place the one now there to ventilate old Bridgeport mine, which is much needed.

DOMINION NO. 1.

The developments at this mine have proceeded at a considerable pace. There has been no important additions to the mechanical appliances as these were complete before, but below ground great advances have been made. The south deeps have been driven down 750 feet and new levels driven south and north 1000 feet. The principal south levels have been extended 300 feet and the north deeps driven 500 feet and a new pair of levels to the north carried 400 feet.

The ventilation all through the mine is very satisfactory. The output has been increased trom 800 tons per day to 1300.

INTERNATIONAL.

The main deeps have been driven down 800 feet, and a pair of levels carried to the south 500 feet, and a new lodgement driven at the extremity of the same. Two bore holes have been put down from the surface to this lodgement, and steam plant erected on the surface, for the purpose of pumping the water directly up the bore hole instead of to the shaft, this will shorten the distance about 4000 feet. Timbering and ventilation is well looked after in this mine.

HUB.

One of the air compressors has been removed from Gowrie, and put in this mine for the purpose of supplying air to pump water from the deeps, and also to drive the deeps down. The deeps have been driven a distance of 1000 feet to the north east. The ventilation has been increased from 10,000 feet to about 25,000 by means of a strong steam jet. I would much rather see a fan there doing the work.

LITTLE GLACE BAY OR STERLING.

There has been nothing done worth mentioning at this mine during the year, except keeping the pit dry, timbering roads, rooms and levels, repairing and keeping the airway in order.

GOWRIE.

Has been very dull during the year. No development of any note. No. 2 Level District where it was worked on the long wall system, has been converted to the pillar and room mode, as before. A bore-hole has been put down from the surface to the lower lodgement, for the purpose of enabling the pump to raise the water direct as at International, but at the date of this report this is not completed.

VICTORIA.

The section west of the workings has been abandoned, with the exception of one balance, having proceeded as far in that direction as was practical. The east levels have been driven 2000 ft., and nearly the whole of the output has been recovered from that section.

There was some trouble during last winter and spring, owing to the pumps not being capable of keeping out the water and the lower level being flooded, which was the air-course. However, the ventilation was ably handled and the work proceeded. A large duplex pump has been put in to raise the whole of the water to the sea level. After two unfortunate breakages, the pump has at last been got into good condition, and has just been got to work with satisfactory results. There is every reason to hope that this will enable the company to reduce the heavy pumping expenses which they had to grapple with during the last two years, and at the same time insure the safety of the mine.

NORTH SYDNEY MINING CO., LT'D.

The wharf that had been built last season in Barrington's Cove, was partly destroyed during a heavy gale last autumn, thus preventing any further shipments of coal. However, it has again been rebuilt, and is in condition for shipping for over a month past. During the winter the levels have been carried forward and some coal taken out which was sold for local purposes.

SYDNEY MINES.

In the pit, new travelling roads have been made north and south from the man hoisting shaft, so as to avoid passing by the coal shaft; also, the approaches to the pit bottom and top of deeps have been substantially repaired by taking down the loose and decayed stone and timbering to the solid rock, and building the sides up with stone and brick.

New landings have been made at each of the following districts: No. 4 and No. 1 south, No. 2 north. From No. 1 district south a self-acting incline has been driven to No. 2 district, and the roadway is now being laid, so that the coal from No. 2 district can be hauled from No. 1 landing, consequently doing away with over a mile of road and two miles of tail rope.

A hauling winch, operated by compressed air, has been placed in No. 2 district north, which hauls the coal from the deeps to the lower landings. A self-acting incline, which has been equipped in this district, started to work in March last, and is doing fairly well. The ventilation all through the mine I found good, including the old workings.

During the year, 78 new steel coal tubs were made, the ends and bottoms of steel, with plank sides and Hadfield's steel wheels and axles. A railroad has been completed from Queen pit to A. pit yard, enabling trains to pass and take water. A new locomotive shed has been built, 75 feet by 25 feet, with the latest improvements for removing wheels and axles. Six workmens' houses have been built. A new shipping shute has been constructed at the loading ground, saving the breakage on coal.

NEW CAMPBELLTON.

Work has been going on steady at this colliery since the opening of navigation. Levels on the west side of the slope have been carried westerly about 600 feet, and headways and rooms broken off.

The coal from the rise workings has been run to the⅓ level by the back balance system. Another section of workings has been opened out on the south side of the slope. The coal looks well and clean. In fact the largest and cleanest coal that I saw in the county was banked there this summer. The slope and travelling road need timbering and repairing. The management has promised to attend to this during next winter. A borehole has been put through the barrier to the old abandoned rise workings, and the water that was standing there let off. This makes the mine much safer.

The following is the number of tons of coal got per pound of powder:

Caledonia, cut by hand picks—7 tons of coal to the pound of powder.

Dominion No. 1.—5⅛ tons to the lb.

Hub—12⅓ tons to the lb.

International—10¾ tons to the lb.

Old Bridgeport—6¼ tons to the lb.

" machine cutting—3½ to the lb.

Reserve—6 tons to the lb.

Victoria—7⅓ tons to the lb.

Gowrie—powder is only used in crosscuts, levels, none in the rooms.

New Campbellton—10 tons to the lb.

Sydney—6½ tons to the lb.

During the last two years unfortunately there have been a number of accidents in the collieries here, and I regret to say that in nearly all cases the causes have been neglect on the part of the sufferers. In conclusion I would like to draw your attention to something that you noticed some years ago, and that was the waste of coal caused by leaving small pillars in some of the mines in this county. The fact is that the pillars are still being left smaller during the last three or four years, and as the workings are so rapidly advancing and those pillars left, in a very short while they cannot be recovered without expense and danger, owing to the decaying of props and the roof falling around them. I would suggest that in future, the pillars be left larger and when the rooms are driven their distance, before the roads are taken out that the pillars be drawn, that is in sections where suitable to the surface.

I have the honor to be your most humble servant,

P. NEVILLE,
Deputy Inspector of Mines.

Accidents in Cape Breton Mines during the year ending September 30th, 1896.

DATE.	MINE.	NAME.	OCCUPATION.	AGE.	REMARKS.
Oct. 15......	Victoria........	William McLeod.......	Miner............	55	Killed by fall of coal, removing coal leg.
" 26......	Reserve........	Hector McLain........	"	32	Fatally injured on head by fall of roof coal.
April 1......	Bridgeport	Andrew Reaves.......	Machine runner..	27	Two joints of two fingers taken off, caught in wheel.
May 8	Sydney..........	Robert Robertson......	" " ..	45	Killed, walked in under cage.
" 14	Bridgeport	John Steel..............	Trapper...........	14	Seriously injured getting on full trip.
" 25	"	Angus McDonald......	Miner	20	Leg broken by piece of stone from roof.
June 4......	"	Alexander Gilliss......	Bank head man..	21	Leg broken while running trip.
" 12......	"	John J. Morroson.....	Miner	30	Four toes taken off by piece of coal from junk.
" 22......	Caledonia	Allen Ferguson........	Loader	24	Killed by part of junk while loading.
July 10......	Reserve	Philip McLennan......	Miner	65	Killed by fall of roof coal while loading.
" 20......	Bridgeport.....	James Cathcart........	"	30	Fatally injured by fall of coal while loading.
Sept. 21	"	John Buchanan........	"	42	Hurt on back by fall of roof stone.
" 21	Hub............	Hector McKinnon.....	"	21	Killed by fall of coal from pillar.

Cubic Feet of Air Circulating through Cape Breton Mines Year ending September 30th, 1896.

MINE.	Oct.	Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June.	July	Aug.	Sept.
Caledonia	69700	68000	70800	71150	71000	70300	70500	61750	70000	70100	70900	78900
Victoria	58000	55700	60000	59990	60000	60070	59100	57800	56700	58200	58040	58790
Campbellton	9910	9050	7800	8600	....	....	10600	9800	12300	15010	14900	15000
Reserve	49000	41300	40000	35000	35700	40000	32200	46360	56400	55550	50100	51000
Little Glace Bay	38000	40000	28000	25000	20000	22000	20200	....	....	....	....	....
Dominion	71040	65500	65120	60000	57800	57800	57900	66000	60[illegible]00	58200	71350	74600
International	67250	69210	50000	36904	35000	31200	36900	45600	50000	55000	65700	87800
Gowrie	39890	30100	28300	25000	29900	38200	29500	32900	28000	40000	38000	30000
Sydney	81000	87500	80100	83180	78000	75135	81900	70000	75210	85550	82620	68539
Hub	32000	25500	20000	10000	10900	14000	10000	26200	19920	25000	29880	36000
North Sydney	....	....	4480	5000	4000	4900	....	....	....	....	....	5400
Old Bridgeport	38000	32000	25000	24600	20000	19000	47000	29000	32760	33100	31900	28700

Official Visits Year ending September 30th, 1896.

MINE.	Oct.	Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.
Caledonia	10, 14	20, 25	4, 5	15	11	14	16	6	4, 23, 27	13	10, 27	10
New Campbellton	12	16	21	"	"	"	27	29	20	28	29	26
Victoria	15	28	16	13	22	19	23	25	12	25	24	12
Dominion, No. 1	21	18	11	8	8	9	25	22	3	14	11	22
Little Glace Bay	22	4	7	"	5	20	24	"	"	"	"	"
Hub	23	7	6	7	5	16	18	7	5	8	12	9, 21
Reserve	24	8	9	10	6	11	15	8	9, 10	11	17	19
Sydney	26	9	14	18	14	24	26	9, 16	19	18	15	16
Old Bridgeport	28	21	17	9	10	7	14	19	8	6	3	23
International	29	4	18	11	12	10	20	20	29	23	4	8
North Sydney	"	"	19	18	12	"	"	"	"	"	"	28
Georges River	"	"	"	"	"	"	"	"	18	"	"	"

MISCELLANEOUS.

In Victoria County the Messrs. Burchell have continued working the New Campbellton Mines. They have considerably extended their workings, and last year they produced 16,483 tons. A notice of the work performed by them will be found in Mr. Neville's report on the collieries visited by him last year.

During the season of 1896 some prospecting has been done in the Mira and Sydney districts, but no reports have been made to the Department.

At Mabou a few tons of coal have been mined. At Broad Cove Mr. Hussey has completed enough of his proposed pier to allow of the operation of the larger dredge mentioned in my last year's report.

The breakwater is now 560 feet long and strongly constructed. The returns show that a large amount of money has been expended, and that when the dredging is completed shipping operations can be promptly instituted on a large scale.

On the mainland there has been little work done at prospecting. As the present collieries are able to take care of a much larger market than is now open to them, the inducements to the coal prospector are not very alluring.

GOLD.

The returns for the year ended Sep. 30, show that 25,596 oz. 14 dwts. 6 grains of gold were extracted. This is an increase over the preceding year. There are some returns not yet received which would bring the production up to about 26000 oz. Much difficulty has been experienced for a number of years in getting prompt and regular returns from many licensed mill owners. I would suggest that the law be amended, making the licensed mill owner and the bondsmen responsible for the prompt making of returns under a penalty, such as is enforced in the case of coal miners. At present the royalty can be recovered by a suit, but there is no penalty for delay in making returns, except a forfeiture of the mill license. This annihilation of the offender may be effective as a punishment but is of little use to the Department, a fine being the proper method both as a deterent and a punishment.

The following general statement shows the yield by districts:—

GOLD.—General Statement for the year ended September 30, 1896.

DISTRICT.	No. of Mines.	Days' Labor.	Mills.	Tons Crushed.	Yield of Gold per ton.			Total Yield of Gold.		
					Oz.	Dwts.	Grs.	Oz.	Dwts.	Grs.
Wine Harbor	2	2250	1	913	....	10	2	501	2	6
Gold River	2	3261	2	425	1	0	8	432	11	3
Fifteen Mile Stream	1	16932	1	5568	....	11	5	3151	5	...
Renfrew	1	653	1	557	....	13	23	389	10	...
Stormont	7	27699	7	22946	....	4	10	5076	0	1
Brookfield	2	9434	2	5353	....	17	15	4683	17	15
Caribou and Moose River	4	30571	4	13918	....	4	2	2864	13	1
Uniacke	4	15685	4	5092	....	14	16	3732	0	15
Sherbrook, &c	4	32953	5	5944	....	9	9	2796	8	9
Waverley	1	11922	1	2560	....	4	4	534	17	12
Central Rawdon	1	13073	1	769	....	13	23	531	13	...
Cow Bay	1	....	1	178	1	6	23	240	4	12
Tangier	3	2861	2	593	....	2	21	85	11	...
Unproclaimed and other Districts	7	13225	8	1056	....	10	22	577	0	4
Total	40	180519	40	65873	....	....	....	25596	14	6

The richest yields per ton were from Cow Bay and Gold River. In view of the increasing importance of our low grade ore mining, some returns are very interesting. Fifteen Mile Stream gave 3,151 ounces from 5,568 tons, Stormont crushed 22,946 tons for 5,077 ounces.

Caribou and Moose River show returns of 2,866 ounces from 13,918 tons.

It may be fairly said that the milling and mining practice in Nova Scotia is now abreast of that of any part of the world. This has been forced upon our operators by the necessity of economy in working the smaller veins of moderate richness.

The experience and economy thus acquired, while necessary and laudable in working small veins with their variable gold contents, is most specially adapted for working low grade deposits. If it be true, as has been stated, that in this Province rock has been during the past year, mined and crushed in a steam mill for $1.50 a ton, it is evident that a grade of ores which could not be touched a few years ago, should now be remunerative. There are, undoubtedly, large amounts of low grade rock in the various districts. In fact, many of the small, rich veins may be more correctly described as limited concentrations in bodies of low grade ore from 70 to 100 feet in thickness.

It is suggested with much show of reason, that if parties interested in the development of our gold resources, would turn their attention to large low grade deposits, rather than to small rich veins, they would do much better. It is certain, that at the present day, given a large and properly tested body of low grade rock, capital can be introduced more readily to put up the machinery to work it than to furnish a lesser sum to develope a small vein, which cannot be predicted to have a history differing from of the veins hitherto worked here. The permanence of low grade properties, when they are started with the precautions of proper testing and preliminary work, is well known. Their working induces permanent settlement, good roads, and a continued market for food supplies, as contrasted with the ephemeral and spasmodic operations so often characterising gold mines here.

DEPUTY INSPECTOR'S REPORT ON GOLD MINES.

WESTVILLE N. S., 1st Oct., 1896.

E. GILPIN, ESQ.,
Dep. Commissioner and Inspector of Mines:

DEAR SIR,—I have the honor to submit you the following report of a tour of inspection of several of the gold mines in the Counties of Guysborough, Halifax, Queens, Lunenburg and Hants.

GUYSBORO' COUNTY.

Isaac' Harbor. I visited various properties in this district, beg ning at Dun Cove where the Griffin Gold Mining Company are work. P. J. Griffin, manager; James Conroy, underground manag 30 men employed; one self-feeder; 10 stamp mill; one engine of H. P. and one of 14 H. P.; boiler 80 H. P.; Shaft down 110 fe Blake Rock brake in use at this mine. The ore is carried 500 feet oı trestle by means of a tail rope, operated by friction gear.

The main lead 8″ thick is known as the Hattie lead, besides wh there are the south lead 10″ and the foot wall lead 6″ thick, and vari other leads not as yet developed to speak of them with certainty.

The North Star Mine has been idle since May, but considera prospecting has been done during the year and various leads expo giving good indications and the hope that work will be resumed at early date.

I visited the *Gold Brook Mine,* Richardson Gold Mining Compa C. F. Andrews, manager, and Gardener McKenzie, underground manag Since my last report, 20 new stamps have been added to the m making it now a 40 stamp mill. A new boiler has likewise been add to the plant. The engine driving the mill is 18″ × 42″. The mill convenience of water supply has been erected at some distance from t main slope, at the side of a lake, thereby necessitating the building o trestle 1200 ft. long from pit to mill, on which the box carrying 1¼ t of ore runs a tub every 8 minutes. The shaft house is situated on t apex of the anticlinal at the east end. The slope is down 200 ft. the north dip and worked round to the east side of the anticlinal c necting the two shafts at surface in the same shaft house. The belt 12 ft. thick, all of which is milled with the exception of a small ba of whin. Pillars are left for support in the mine varying in size 12 square to 20 ft. square. The travelling way is in good order and s and easy. A considerable amount of prospecting has been done on t property with satisfactory results. The ore is obtained at the mi probably the most economically of any I have yet visited, it is favora situated, about 1⅛ mile from shipping, with good road leading to it.

July 3. Forest Hill District. E. S. Sweet & Co. are working a lead 9″ thick, called the McDonald lead. The shaft is now down ft., and 15 men are employed. Mill five stamps, engine 10 H.- boiler 20 H.-P. As operations have only recently been started, r much as yet can be said of this mine.

James McConnell is working on the *Salmon River lead*, and h 20 men employed, and has some 300 ft. opened up along the le which is 2″ thick. All his work is open. He is likewise engag prospecting the property, and has his quartz milled in E. S. Swee mill.

The Modstock Mine, J. W. McIntosh, manager. Fifty men and 5 horses employed. The mill lead is 3 ft. thick and on it there are two shafts, one of which is 110 ft. deep and the other 50 ft. On the *Ophir lead* there are 5 shafts of the following depths: 75 ft., 116 ft., 60 ft., 70 ft., 50 ft. The mill has 10 stamps, engine 25 H.-P., boiler 40 H.-P. On the Ophir lead there are 700 ft. opened up and connected. *The Salmon River lead*, 2 ft. thick, is also opened up on this mine, and on this property there are altogether from 900 to 1000 ft. of leads opened up. One of the greatest hindrances in this district is the bad roads, of which there are from 3 to 4 miles almost impossible to travel upon with horse. I sincerely trust that this state of affairs may be soon remedied, as the names of the men I have mentioned, the capital invested, together with the promising appearance of the mines, is enough to warrant better roads, and success to the mining enterprises in this locality.

July 4, 1896. Crow's Nest Mine. W. H. Weston, Manager, H. H. Dimock, Underground Manager. 6 men employed underground, and 4 on surface. Mill, 5 Stamps. Engine, 20 H.-P. Boiler, 30 H.-P. The Stake lead, 15 ft. thick, in which they were driving east, was the only one in which work was being done at the time of my visit. There is another lead 10 ft. thick, called the "North" and also a belt of leads, with slate 2 ft. thick. The Management intend to add 5 more stamps to the mill, and begin working on the big lead or belt at an early date. This mine is in good condition. I will here state briefly the accident by which Samuel Hoskings, Underground Manager, was killed. On April 18, 1896, in the morning he went into the east side of the "stake" lead to where Sterling Conrod and Hugh Fraser were at work. They had set up the steam-drill and were proceeding to drill a hole the direction of which did not seem to please Hoskings, and he asked to be permitted to change the direction, and he did so. It would appear that on the evening before, some six or seven shots had been fired off and there had not been any examination of their effect until the following morning, and they failed to notice that one of them had not exploded satisfactorily, leaving dynamite in the hole unexploded. In drilling the hole as changed by Hoskings, it came nearer to this old hole with the dynamite in it, and he had barely started the drill to run when the dynamite exploded, a piece of rock cut his jugular vein and death ensued in a few minites. The other two men were hurt but not seriously.

WINE HARBOR DISTRICT.

Wine Harbor Barasois Gold Mining Co. Richard Sherman, Manager. 23 men employed. Mill, 10 stamps. Boiler, 100 H.-P. Mill-engine, 25 H.-P. Engine at hoist, 20 H.-P. Work is being done on the Romkey lead, which is 8 ft. thick. On the lead there are three shafts of the following depths: pumping shaft, 190 ft., east shaft, 13 ft. and west shaft, 132 ft. This is an old mine and has been qu recently opened up, after being idle for some years, yet the timber appears good and sound and has been well placed. A steam drill is in use in this mine. This is about all the work doing in this district. Dr. Ames had done some work, but had stopped a few days previously to my visit, and was absent from the place when I called.

GOLDENVILLE.

New Glasgow Gold Mining Co. July 6, 1896. James A. Fraser, Manager, and Don. Fraser, Underground Manager. 45 men employed, 10 stamps in mill. Four leads opened up, viz., Sears, on which there is a shaft 75 ft. deep; "Striker" shaft, 100 ft. deep; "Canada" shaft, 115 ft. deep, and North Lead, on which there is a shaft 120 ft. deep. All of these leads are connected 75 ft. from the surface by cross tunnels, and there are from 500 to 600 ft. opened up along the lead. Three drills are run by compressed air. Although the shafts are old ones reopened, the condition of the mine is very satisfactory. New scaffolding has been built, and travelling ways, which look strong and safe. Some dynamite, while being thawed out at surface, exploded at this mine. It was placed in a tin can, and that placed inside another, with hot water. Several men were standing near at the time of the explosion, but fortunately no one was seriously hurt.

The Bluenose Mining Company, Arthur G. McNaughton, Manager, Joseph Williams, Underground Manager. 32 men employed. At date of visit they were working on two leads or belts on the Springfield property, and had one shaft down 40 ft. and another 140 ft., and yet another down 110 ft., making 3 shafts in all. They had also commenced to do some work on the Coburg property, and also on the Caledonia property. These three properties have been amalgamated and will be known hereafter as the Bluenose Mining Company. With the idea of concentrating the work as well also of economy of labor, the company are building a new 20 stamp mill, as the present mill is too small, and is not situated in a central place. The new mill is well situated so as to handle all the ore from the above named three properties. As the Coburg and Caledonia are low grade ores, it is only by handling large quantities that the owners expect to make it pay. The present small mill is paying, but when the larger mill with improvements that are connected with it is running, much better results are confidently anticipated. When fully completed this will be the largest plant as well also the largest property now in operation at Goldenville. It is expected that the mill will be running on or about the 30th August, 1896.

I regret to state that on the 10th April, 1896, a man named John Worth, was accidently killed by a fall of rock in the Springfield mine. There was a piece of bad rock in the mine. Several men were at work who were all perfectly aware of such being the case, and that it was intended to be taken down, but according to the usual practice followed it was allowed to remain until considered unsafe. It would appear in this case, however, that the rock was shaken or moved by the concussion arising from a shot fired in close proximity, and that the men returned before the smoke from the shot had cleared away, seemingly from this action considering the place perfectly safe, or they would never have gone underneath it in such unfavorable circumstances. At any rate they went underneath it and the rock fell and killed Worth, and seriously injured another man named John Stewart. Both of these men were good practical miners, and I would here emphasize the necessity of miners, no matter how skilled or practical, exercising extreme care and every precautionary measure when employed in places in which there is broken rock unsupported and liable to be detached, as it is not necessary for men to take chances in cases of this kind. They are expected to secure their safety by taking down all loose rock, or by putting timber to it, or at least reporting it to the management. In the above case neither of these things were done.

LISCOMB MILLS.

Alexander McLeod and Malcolm Cameron were prospecting at Liscomb Mills, and had a small test mill in position, and other facilities for proving the value of some of the large lodes showing on areas held by Daniel McDearmid et al. Openings were made on the "Giant Reef," so called, a solid mass of quartz some 20 ft. in width. There was a number of tons of this lode taken out and hauled to the mill to be crushed. North of the Giant lode, and only a short distance from it, are the following, viz.: a 20 ft. band of slate and quartz, showing gold; also, a 15 ft. lode of quartz, and 10 ft. of quartz and slate. This lode is named Madden's lode, and shows fine gold. All of the above dip at an angle of 42° north, and are traceable for over three-quarters of a mile. It is needless to say, should some of the above large lodes carry gold to pay on the surface, as the supply of quartz is very large, that these properties would be very valuable. I might further add that the natural facilities and advantages for mining and milling are very great, there being an abundance of water and the mine close to the main road.

The Dufferin mine, Killag mine, and Beaver dam mine, are idle.

Tangier Mine. John Murphy is still at work on the Nigger lead, Essex property, and has three men employed. The mill is in good order.

Joseph Fox, Alex. Watts, and George Clements, are working on the Kent property, Nigger lead, but further west than Murphy. This lead is 20 inches thick, and some very fine nuggets have been obtained here by these parties. When there I saw about $200 worth with them at the mine.

MOOSELAND DISTRICT.

William Yeadon has here 7 men employed, working on the

Cummings belt, which is 3 ft. thick. He has a shaft 40 ft. depth down. There are also 3 men working on the west end of the same belt

H. G. Stemshaw has 3 men prospecting his property, on which there are 5 belts and leads opened, as follows: The Irving belt, 3 ft. thick, North belt, 2½ ft. thick, Specimen lead, 3½ inches, Cummings belt, 3 ft. and the Furnace lead, 5 inches. These belts and leads are all opened at various places.

In this district a large amount of promising work can be done very economically. The ground rises some 80 or 90 ft. above the water level, along the "strike" of belts and leads, thus giving an opportunity of working 80 or 90 ft. in depth, without requiring the aid of mechanical appliances to extract the water.

MOOSE RIVER GOLD MINES DISTRICT.

D. Touquoy, Manager; Edward Jennings, Underground Manager. 16 men employed. The shaft is down 140 ft. on the little copper lead or belt. The North belt is idle. The largest amount of work is being done on a [illegible] ft. belt, from which they are crushing 600 tons per month. It is low grade ore, yet it is paying well. The mill has 15 stamps and is run by water power. Two horses are employed hauling the ore to the mill. The general condition of affairs in and around this mine is in a satisfactory condition.

In this same district Andrew McGregor has 12 men working on the Montreal property, principally on a belt of low grade ore. He is also doing some work in an old shaft east of Touquoy property.

John Ronalds has 10 men employed at work on the Little Copper Lead, Montreal property, and has two shafts down—one 90 ft. and the other [illegible] ft., both of which are in fairly good condition. He has also taken up some claims east of Touquoy's property, on which he has sunk two shafts, 15 or 16 ft., on the two belts or leads. One of the shafts is on a 3 ft. belt, the other is on a 5 inch lead. In both shafts gold is visible.

Nathan Higgins has 3 men employed at work in the South Shaft Ronalds property, on what was formerly known as the Canaan lead, which is [illegible] inches thick, and was opened some 12 years ago.

D. Touquoy is the leading man in this district. He says gold was discovered here in 1866 by some lumbermen engaged blasting rock out of the river accidentally exposing some gold bearing quartz. He Touquoy then took up some property, and some years later erected the mill he is still using. This mill has been running [illegible] years, and the returns will shew what he has been doing for that period. The place looks well to-day.

CARRIBOU GOLD MINES DISTRICT.

W. A. Saunders, Manager, Angus McDonald, Underground Manager. 30 men employed. Shaft down 125 ft., then the slope from bottom of shaft is down 675 ft. on an angle of 36°. Mill 10 stamps. Boiler 80 H.-P. Pumping engine 35 H.-P. Mill engine "Compound" 50 H.-P. This mine is in good condition and the travelling ways are in good order. As the working are on a belt of low grade ore some 20 ft. thick it requires considerable timber in such a wide belt to maintain the mine in a safe condition. No positive rule can be given for timbering in a mine of this kind, it is a matter of plenty timber set at all necessary places and at such angles as the most benefit may be derived therefrom, and I might say that every endeavor is made to have this mine in a state of safety if timber can be relied upon to do so.

The Dickson Mine.—A. McLeod, Manager, Alex. Cameron, Underground Manager. 36 men employed. 3 shafts, depth 375'. These shafts are on an angular lead which is 4 inches thick, at 200 feet a tunnel is driven south 30 ft. and north 60 ft., but I am sorry to say that in it nothing of an encouraging nature was cut. The mill has 5 stamps. Engine 30 H.-P. This mine is kept in good repairs with good travelling ways. It is almost perpendicular, and they are still at work sinking, the water is not heavy and this is in their favor.

The McDonald Mine.—Patrick Carr, Manager, Thomas Lindsay, Underground Manager. 14 men employed. Engine 30 H.-P. 5 stamp mill. 2 shafts. The hoisting shaft is down a depth of 120 ft., then 130 ft. on an angle of 40° from bottom of perpendicular. The mine is fairly timbered with good travelling ways, and is worked in a 12 inch lead. Some prospecting is being done in this locality.

Little Liscomb Gold Mining Co.—John Power, Manager, Levi Cruickshanks, Underground Manager. 21 men employed, 10 stamp mill. 25 H.-P. engine. The hoisting engine is 12 H.-P. They have here 2 belts, one 2½ ft., called the slate belt, the other has 3" lead on foot wall and 3" lead on hanging wall, with slate and whin between. One shaft is down 65 feet on the big belt, there is about 500 ft. open on each of the belts or say 1000 ft. open on both. The mine looks safe and prosperous. I might further add that the 3 ft. belt has 14 inches of milling ore.

FIFTEEN MILE STREAM GOLD DISTRICT.

Egerton Mining Co.—Large improvements overground have been made here since my last report. An air compressor has been built by the Canada Rand Drill Co. Compound engines, high and low pressure, high pressure is 12" x 18" and the low pressure 18" x 20", also a new boiler of 90 H.-P. The engine is capable of running 10 drills if required. The boiler is for running the mill and saws. They are now building some new houses and sawing the timber, boards, shingles, laths, &c., on the ground. They are erecting a new mill house the main building of which is 28 x 37 with 4 large sheds attached, one at either side and ends. There will be 30 stamps in the mill, driven by an engine of 75 H.-P., compound and condensing. High pressure 8 x 14, low pressure 16 x 14. This engine runs as well also the rock breaker, and elevator and endless rope drum by means of which the ore is taken from the different shafts to the mill, it will also be employed to run the dynamo and saw mill.

There is one shaft down 75 ft. on the west end, of the Nonpariel lead, and one 200 ft. on the east end, and one 240 ft. in the middle. On the "Orient" belt one shaft is down 220 ft. and 200 ft. opened up along the belt which gradually gets thicker as they drive west, and is now 3 ft. thick at the west end. There is the largest amount of ore in sight here that I have seen at any mine in this country. There are several cross tunnels driven cutting the belt, shewing the thickness from 40′ to 240′ down.

G. F. McNaughton is the Manager and L. McLean, Underground Manager. 35 men are employed.

Abraham Walten with 3 men is employed prospecting here, also John A. Steale and Mosher are prospecting for McGregor, McDonald and Co. I need scarcely add that as a necessary consequence of the large amount of work done there is quite a boom in this locality. I need only refer you to the returns which speak much more eloquently than I can. In conclusion I may say speaking generally of the mines I have mentioned I found them in fair condition with one or two exceptions, and these exceptions were promptly put to rights. I consider the gold mines are improving,and that it is positive large dividends are going to come from the big belts of low grade ores.

QUEENS COUNTY.

MALAGA LAKE.

Aug. 11, 1896.—Visited the Parker Douglas mine, and found D. S. Turnbull and Doull with 7 men working tribute on the twin lead, which is 3 ft. thick on the foot wall and 2 ft. thick on the hanging wall. One shaft at the west end was down 40 ft. and another at the east end 25 ft. They are 60 ft. apart and connected.

The Old Provincial Mining Property.—A. J. Cox, Manager ; John Thorburn, Underground Manager. 12 men employed, working on the McClair lead, which is 8 in. thick. The depth of the shaft is 56 ft. They have opened up 56 ft. east on the lead. There is an engine of 30 H.-P. running the pump and doing the hoisting. Also, a compressor, capable of running 4 drills and mill with 10 stamps. The condition of the mine is very good. Other leads have been cut which show gold.

This is all the mining being done here at present.

NORTH BROOKFIELD DISTRICT.

The Peter Dunbrack Shaft is down 42 ft. on an angle of 40°, and is 11 ft. wide and 4½ ft. high inside the timbers. Three men employed. The belt is about 5 ft. thick, and appears to be very rich. This is only a new mine and is not as yet fully equipped.

The Foster and Dickson Mine.—B. Murchey, Underground Manager. 14 men employed. The west end shaft is down 207 ft. and the east end shaft is down 190 ft. The lead is called the Dunbrack lead, and is 18 ft. thick. The mill has 20 stamps ; engine 50 H.-P. ; and also a hoisting engine of 20 H.-P. The manager was not present at time of my visit, and the underground manager assured me that he would inform the manager, it was considered unsafe and dangerous to have men travelling 200 ft. without any mid-wall between them and the hoisting. In all other respects the mine was in fair condition.

NORTH BROOKFIELD DISTRICT.

The McGuire Mine. Noble Crow, Underground Manager. 35 men employed in and about the mine. Beside these, there was, however, quite a number of men employed building a new mill.

At this mine there is an incline down 600 ft., on an angle of 38°. Then there is a shaft which cuts the incline at a depth of 350 ft. The shaft is first 110 ft. perpendicular, then it descends at an angle of 22°, dipping south until it cuts the incline on the lead called Fisher's lead, which is 13 ft. thick. The Management intend utilizing the incline for pumping and airway, and are erecting a new mill which when completed will have 20 stamps The shaft comes up in the mill house, on which it is intended to build a tower about 70 ft.

sunk to strike the pay-streak and was estimated to strike it soone than it actually did, as the provisions made for air was inadequat and at time of visit, the air was very bad.

The Prince Mine, South Uniacke. George E. Dimock, Undei ground Manager, with 30 men employed. The shaft in the west i down 60 ft. and the shaft in the east is down 140 ft. The lead is inches thick and is the slate lead. Mill is 10 stamps and Engine 2 H.-P. The hoisting engine is 50 H.-P., two boilers, 85 H.-P., the wor is on the North Dip. This mine has been worked very carelessly b tributers, and there is a very large space without scaffolds and wit very little timber. The present Management are, however, repairin the mine and putting it in working order.

Golden Lode Mining Co. A. A. Hayward, General Manage Matt. Thompson, Assistant Manager. 26 men employed. The shai is down 403 ft. perpendicular, then 300 ft. on an angle of 36°, th lead is 5 inches thick. 5 stamp mill. Engine, 25 H.-P. Two boiler 100 H.-P. There is a Northey Compound Condensing and Duple pump: two 8 inch H. P., 14 inch L. P., 4½ inch plunger, 16 inch stocl 400 ft. water column, 3 inch pipe. Steam pipes, 2 in.: also Cameron pump in the lower lift, outside packed plungers, stear cylinder, 16 inches, 7 inch stroke, water plunger, 3½ inches. Steam i carried to the Cameron pump from the 2 inch steam pipe carryin steam to the large pump. The pumps underground are all condensin and of great value in assisting the ventilation: the air sweeps alon the working faces very nicely. There is also a force pump and som 300 ft. of hose kept in the engine house in case of fire. The travellin ways are in good condition, with new rungs in the ladder and stay every 20 ft. Taken on the whole this mine is in very goo condition.

All of which I respectfully submit,

Yours very faithfully,

WM. MADDEN, Jr.,
Dep. Inspector of Mines.

IRON MINING.

Work has continued as usual during the season at the furnaces.

The Nova Scotia Steel Company have worked their mines on the East River to some extent, the production amounting to 13,237 tons. They also purchased some ore from the Bridgeville Charcoal Co. Their mine at Bell Island, Newfoundland, was worked during the summer. Some ore was exported to the United States and about 20,398 tons brought to Ferrona. The ore is a red hematite of good quality and cheaply worked. About 3,385 tons of Spanish ore were also imported.

PICTOU.

The Charcoal Iron Company mined during the year 12,099 tons of limonite, employing an average of thirty men, who were constantly kept at work. The furnace was not in blast during the year. The puddle furnace was run for a few weeks, during which time about 100 tons of pig were converted into muck bars.

The Torbrook Mine worked up to July producing 19,944 tons, which was sold to Londonderry and Ferrona. When closed down the mine was in good working order with a large amount of available ore.

No work was done at the Arisaig Mines this year. In Cape Breton, a large bed of magnetite was found near the Indian Reserve, at Whycogomagh, which from its good quality and accessibility should prove useful for export.

MISCELLANEOUS.

Work was carried on at the West Bay Marble Company's quarry, and a number of shipments made of marble. The front of a building erected in Halifax this year shows its adaptability for architectural purposes.

At Coxheath, Cape Breton Co., little was done by the Eastern Development Company. The present prices for copper should certainly admit of its being worked at a profit. A few tons of the rich copper ores from the River John and Tatamagouche districts were shipped. At Georges River, near North Sydney, some encouraging development work was carried on under the charge of Mr. C. P. Moffat. It appears that work was begun last winter. Since that time the shaft has been sunk 80 feet on the lode, dipping one in four south, with a course of S. 72° E. Good ore was found from the surface down, mixed with quartzose rock and fine slate. At the bottom of the shaft the lode was cross cut and found to be 28 feet wide. The first 12 feet carried excellent ore, the remainder was fine slate with very fine ore mixed. It is to be hoped that the development so far made will be persisted in, as there are few places more favorably situated for copper smelting than the Sydney district.

Manganese mining contined dull, and presents no points of interest. About 170 tons of plumbaginous shale was shipped for testing purposes from Benacadie, Cape Breton Co.

Reference may be made here to efforts aimed at the utilization of slack coal. The quantity of coal which, unsaleable by reason of its small size, has been thrown into waste heaps and allowed to burn up, amounts to many millions of tons. Any attempt to utilize this material is well worth the consideration of your Hon. Government. The Dominion Coal Co. has erected at Halifax a plant in which washed slack can be made into an excellent metallurgical coke. The gasses from the ovens can be cleaned and utilized for fuel purposes or after enrichment for lighting. These gasses yield tar, ammonia, sulphur and cyanide. The tar, it is proposed to utilize in the manufacture of briquettes, the other by-products finding a ready market. Coke of a good grade, manufactured at aconvenient place like Halifax, will be found useful by any future smelting establishments, as well as an economical substitute for Anthracite coal for domestic purposes.

The utilization of the iron ores of Nova Scotia to their best advantage in the blast furnace, has always been attended with some disadvantages due to haulage of ore or fuel. It may be questioned if a supply of good, cheap coke at Halifax, would not, all things considered, point it out as a most convenient point for iron manufacture.

On the Continent of Europe and to a small degree in England, compressed fuel is finding many advocates. The slack and culm is dried and pressed into bricks, rendered cohesive by a small admixture of tar, etc. These bricks are largely used in the continental men-of-war and to some extent on railways as well as for domestic purposes. The fuel thus compressed stows in a small space, makes little dust, and is easily handled. As the slack coal often represents the best portions of a seam of coal, it will be readily believed that many briquettes are not only low in ash, but high in heat producing powers. The Messrs. Archibald worked a briquette machine at Cow Bay, and with fairly encouraging results. From the experience then gained, it would appear certain that plants for making this patent fuel erected and operated by the Dominion Coal Company at points like Montreal, Halifax, Quebec, St. John, etc., would prove highly profitable.

The above is respectfully submitted by

Your obedient servant,

E. GILPIN, Jr.,

Inspector of Mines.

LIST OF MINERAL LEASES (OTHER THAN GOLD.)

IRON.

No. of Lease.	Name of Owner.	County.	Agent or Manager.	Address.	No. of Sq. Miles.
36, 93	Moseley, E. T.	Cape Breton			2
145	McLean, Jno	"			1
91	Brookman, P	"			1
92	Matheson, D	"			1
102	Smith W	"			1
103	McKenzie, H. R	"			1
104	McKenzie, J. W	"			1
43, 44, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59	Bartlett, J. H	Pictou			15
60, 68, 70, 71	Nova Scotia Steel Co	"			4
61, 67	Cameron, J. A	"			2
1	McIntosh, J. C	"			1
2	McDonald, L	Antigonish			1
92	McAloney, J	Cumberland			1
5	McDougald, J	Antigonish			1
10	Fraser, W. J	Inverness			1
1, 2	Nova Scotia Steel Co	Guysboro			2
22, 82	McMillan, J. R	Inverness			2
					37

	COPPER.				
145	McLean, J	Cape Breton			1
142	LeCras, H.	"			1
126	Matheson, A	"			1
116	Greener, J	"			1
95, 106	Eastern Dev. Co	"			2
105, 181	Burchell, J. E	"			2
94	McKenzie, D	"			1
2	Grant, J. A	Antigonish			1
3	Franklyn, G. E	"			1
4	McInnis, Hugh	"			1
7	Nichols, T	Victoria			1
6	Hardman, J. E	"			1
5	Cove, J. W	Colchester			1
135	McKenzie, R	Cape Breton			½
					15½
	LEAD.				
143	Cape Breton Silver Mining Co	Cape Breton			1
2, 3	Fraser, C. F	Colchester			2
					3
	COAL				
83, 84, 85	Barton, A. McG	Pictou			3
$^{1}_{2}{}_{3}$, $^{2}_{4}{}_{2}$, 3, 4, 62, 63, 64, 69	Acadia Coal Co	"	H. S. Poole	Stellarton	18
5/12, 6 13, 9 14	Intercolonial Coal Co	"	C. Feigie	"	3
8 6	Nova Scotia Steel Co	"			1
				Carried forward	25

LIST OF MINERAL LEASES (OTHER THAN GOLD.)—*Continued.*

COAL.

No. of Lease.	Name of Owner.	County.	Agent or Manager.	Address.	No. of Sq. Miles.
				Br't forward.	25
10 24	Richey, M. H	Pictou			1
11 11, 45, 10	Gray, B. G.	"			4
66 46	Forgie, C.	"			1
46, 83	Nova Scotia Steel Co.	"			2
					33
56, 22 51, 74, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104 14	Canada Coals & R'y. Co	Cumberland			15
55, $\frac{16}{6}$, $\frac{17}{7}$, $\frac{18}{8}$, $\frac{20}{52}$, $\frac{21}{35}$, 61.62.70.71, 72, 73, 75, 76, 77, 78, 79, 81, 82, 83, 84, 85, 87, 88, 90.177.108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124	Cumberland Rail'y & Coal Co.	"	J. R. Cowans	Springhill	48
8 5	Lawson Mining Co	"			1
6 12	Londonderry Iron Co	"			1
15	Prospect Mining Co	"			
9 22, $\frac{10}{23}$, $\frac{11}{28}$, $\frac{12}{20}$, $\frac{13}{30}$	Styles Mining Co	"			5
23 53	Binney, J. W.	"			1
24 47, 25 49	Boston Coal Mining Co	"			2
57	Salt Springs Coal Co	"			1

26 16	Minudie M. & T. Co	Cumberland			1
58. 59. 60. 61	Tupper, C. H	"			4
63. 93. 105	Leckie, R. G	"			3
65	Annand, C	"			1
66 67. 68. 69	Cowans, J. R	"			4
80	Gue, T. R	"			1
86	Rutherford, J	"			1
91	Fraser, H R	"			1
89	Hickman, J. S	"			1
94. 107	Weatherbe, U. T	"			2
94	Hayward, A. A	"			1
106	Vroom, W. E	"			1
107	Fitzsimmons, R	"			1
					96
13 79, 1 27, 2. 3. 28. 29. 30	General Mining Association	Cape Breton	R. H. Brown	Sydney Mines	23
37 78, 58 67	Weatherbe, R. L	"			2
42 52, 49 53	McLeod, Hugh	"			2
207, 45 5, 46 28, 47 29, 50 40, 51 41, 52 42, 60 54, 61 55, 62 56, 63 57, 64 58, 65 59, 66 60, 67 61, 68 62, 69 63, 108, 109. 110, 125, 137, 162, 188	Dominion Coal Co	"	H. Donkin	Glace Bay	94
117	Hamilton, A. G	"			1
142	LeCras, Henry	"			1
111	Greener, Jno	"			1
214	Cayley, H. St. Q	"			1
			Carried	*forward.*	125

LIST OF MINERAL LEASES (OTHER THAN GOLD.)—*Continued.*

COAL.—(*Continued.*)

No. of Lease.	Name of Owner.	County.	Agent or Manager.	Address.	No. of Sq. Miles.
				Br't forward.	
179. 180, 164, 168, 190, 208	Roberts, F	Cape Breton			6
112, 113, 114, 115, 118, 42	Cowans, R	"			6
130	Fairbanks, E. C	"			1
128, 129 134, 135, 136, 139, 144	Moseley, E. T	"			7
138, 149. 184, 203	White, A. J	"			4
141, 177, 140	Cumberland Ry. & Coal Co.	"			3
146	Tremaine, B. E	"			1
159. 160	Morrison, A. G	"			2
166	Dunn, J	"			1
161	Routledge, E	"			1
169, 170, 183	McKay, Jas	"			3
178	Routledge, W	"			1
165	Stephens, L. H	"			1
163. 185	Hamilton, C. F	"			2
199, 193, 194, 176	Copeland, J. D	"			4
171, 174, 212	Goreham, J. W	"			3
181, 211	Burchell, J. E	"			2
0	McKinnon, D. L	"			1

209. 206, 186, 187, 202, 205	Kennelly, D. J	"			6
210	Harold, T. C	"			1
196	Routledge, T	"			1
201	Hickey, C	"			1
204	Morrison, M	"			1
0	McCuish, A	"			1
192	McKenzie, J. A	"			1
198	McKenzie, Jas. A	"			1
175	McDonald, J. W	"			1
182, 200	Cossitt, G. G	"			2
167	Murray, J	"			1
189	Morrison, J	"			1
191	Tremaine, L. E	"			1
195	McDonald, A. J	"			1
197	McVicar, J	"			1
					195
1/2	Burchell Bros	Victoria	J. T. Burchell	N. Campbl't'n	3
1/13	McGregor, T. D	Inverness			3
2/6	Ross, H. E	"			1
6/4, 7/10	Shannon, S. L	"			1
8, 9. 10	Fraser, J. W	"			3
11	Dawson, G	"			1
19. 20	Smythe, J. J	"			2
12, 13, 14, 15	Broad Cove Coal Co	"	W. P. Hussey	Broad Cove	4
26	McKenzie, J. W	"	"	"	1
16	Drummond, R	"	"	"	1
			Carried	*forward.*	

LIST OF MINERAL LEASES (OTHER THAN GOLD.)—*Continued.*

COAL.—*(Continued.)*

No. of Lease.	Name of Owner.	County.	Agent or Manager.	Address.	No. of Sq. Miles.
				Br't. forward.	
	MacNab, W.	Inverness	W. P. Hussey	Broad Cove	1
	Hussey, W. P.	"	"	"	1
	Jones, A. C.	"	"	"	1
25. 28	McColl, J.	"	"	"	3
8/11	Boston and N. S. Coal Co.	"	"	"	2
	Tupper, M.	"	"	"	1
[illegible]. 30	Tremaine, E. D.	"	"	"	2
85	Ross, W.	"	"	"	1
32. 33. 34	Wallace, W. V.	"	"	"	3
					31
1. 7. 8	Terminal City Co.	Richmond	"	"	3
2	Columbia Coal Co.	"	"	"	1
3	Reynolds, W. K.	"	"	"	1
5	Chisholm, W.	"	"	"	1
4. 6. 9	Lennoxville T. & C. Co.	"	"	"	3
0	Catherine, Jos.	"	"	"	1
					10
1	McMillen, T. C.	Colchester	"	"	1

TABLE A.—COAL TRADE BY COUNTIES, FOR THE YEAR ENDING SEPTEMBER 30TH, 1896.

	CUMBERLAND.		PICTOU.		CAPE BRETON.		OTHER COUNTIES.		TOTAL.	
	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.
1st Quarter.........	131,953	120,356	109,941	99,943	255,015	271,313	4,327	2,926	501,236	494,538
2nd „	132,408	116,858	83,955	60,692	109.232	60,523	1,070	420	326,665	238,493
3rd „	115,318	101,382	95,855	86,931	406,906	362,043	5,870	4,859	623,979	555,215
4th „	96,358	84,187	105,476	104,127	574,601	563,483	7,157	7,090	783,592	758,887
Total........	476,037	422,783	395,257	351,693	1,345,754	1,257,362	18,424	15,295	2,235,472	2,047,133

TABLE B.—COAL TRADE BY COUNTIES, FOR THE YEAR ENDING SEPTEMBER 30TH, 1896.

	CUMBERLAND.			PICTOU.		CAPE BRETON.		OTHER COUNTIES.		TOTALS.			GRAND TOTAL.
	Round.	Slack.	Run of Mine.	Round.	Slack.	Round.	*Slack.	Round.	Slack.	Round.	Slack.	Run of Mine.	
Nova Scotia :													
Land Sales	42,434	85,764	2,194	122,873	92,652	4,573	8,208	698	....	170,578	186,624	2,194	359,396
Sea Borne	623	117	....	33,461	2,388	212,494	53,035	4,889	....	251,467	55,540	....	307,007
Total Nova Scotia	43,057	85,881	2,194	156,334	95,040	217,067	61,243	5,587	....	422,045	242,164	2,194	666,403
New Brunswick	145,338	47,446	7,881	6,134	1,263	31,860	11,871	500	....	183,832	60,580	7,881	252,293
Newfoundland	....	....	....	138	....	88,549	3,308	2,241	....	90,928	3,308	....	94,236
P. E. Island	47	371	....	19,497	20,300	6,447	15,629	709	....	26,700	36,300	....	63,000
Quebec	50,163	4,466	18 922	52,027	960	610,208	52,056	6,258	....	718,656	57,482	18,922	795,060
West Indies	60	315	....	....	....	847	....	....	....	907	315	....	1,222
United States	169	16,298	175	....	....	148,227	10,050	....	....	148,396	26,348	175	174,919
Other Countries	....	....	....	....	....	....	....	....	....	....	....	....	....
Total	238,834	154,777	29,172	234,130	117,563	1,103,205	154,157	15,295	....	1,591,464	426,497	29,172	2,047,133

COAL.—SALES.

NAMES.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	Year 1896.	Year 1895.
Nova Scotia:						
Land Sales.	112,592	93,842	75,642	77,320	359,396	341,072
Sea Borne..	101,899	36,556	67,509	101,043	307,007	291,969
Total N. S..	214,491	130,398	143.151	178,363	666.403	633,041
New Brunswick.	64,401	59,028	62,637	66,227	252,293	228,525
Newfoundland ..	36,361	6,337	14,918	36,620	94,236	81,492
P. E. Island.....	20,208	....	15,725	27,067	63,000	63,232
Quebec	133,019	29,346	261,258	371,437	795,060	740,098
West Indies....	375	....	....	847	1,222	11,872
United States...	25,683	13,384	57.526	78,326	174,919	73,097
Other Countries..	....	....	....	....	....	....
Total....	494,538	238,493	555,215	758,887	2,047,133	[illegible] 1,8

COAL.—GENERAL STATEMENT.

1896.	Produce.	Sales.	Colliery Consumption.
1st Quarter....................	501,236	494,538	50,213
2nd "	326,665	238,493	60,436
3rd "	623,979	555,215	38,561
4th "	783,592	758,887	38,955
Total........	2,235,472	2,047,133	188,165
1895........	2,089,245	1,831,357	203,414

COAL PRODUCE OF NOVA SCOTIA FOR YEAR ENDING SEPTEMBER 30, 1896.

COLLIERY.	Produce.	Sales.			Total Sales.	Colliery Consumption.	
		Round.	Slack.	Run of Mine.		Engines.	Workmen.
Chignecto	304	214	10	....	224	....	48
Joggins	59,125	42,301	9,059	....	51,360	5,891	1,311
River Hebert	4,203	2,178	335	....	2,513	902	320
Scotia	1,085	831	204	....	1,035	22	38
Springhill	411,320	193,310	145,169	29,172	367,651	20,020	7,157
Acadia	198,884	110,003	60,438	....	170,441	24,546	5,193
Intercolonial	196,373	124,127	57,125	....	181,252	11,283	4,225
Dominion	1,079,198	908,090	120,168	....	1,028,258	57,566	18,054
Sydney	265,142	194,110	33,989	....	228,099	17,777	11,667
Greener	1,414	1,005	....	....	1,005	....	239
New Campbellton	16,483	14,496	....	....	14,496	1,399	438
Mabou	1,328	286	....	....	286	12	57
Broad Cove	613	513	....	....	513	....	....
	2,235,472	1,591,464	426,497	29,172	2,047,133	139,418	48,747

Statement of number and classes of men employed, etc., etc., at each Mine during the Year ended Sept. 30, 1896.

	UNDER GROUND.				ABOVE GROUND.				CONSTRUCTION.				TOTAL.		Average tons raised per day.	Horses.		Pits worked.
	Skilled Labor.	Labo'rs.	Boys.	Days' Labor.	Skilled Labor.	Labo'rs.	Boys.	Days' Labor.	Skilled Labor.	Labo'rs.	Boys.	Days' Labor.	Persons.	Days' Labor.		Above.	Below.	Days App.
Joggins	84	44	16	33873	6	43	3	11813	....	....	....	......	196	45686	265	4	4	221
River Hebert	1	14	3	1818	3	2	1	1378	....	....	....	......	24	3196	......	....	......	139
Springhill	404	284	92	168936	92	154	23	65615	7	....	....	2036	1056	236587	1600	13	12	258
Acadia	221	209	57	109072	62	123	32	62438	1	1	....	519	706	172029	......	17	20	....
Intercolonial	180	95	74	88090	30	72	15	39908	4	2	1	1232	473	129230	800	10	11	250
Dominion	1330	500	300	380896	250	320	50	129185	....	....	....	......	2750	510081	4800	55	160	225
Sydney	350	50	94	127987	64	93	40	54859	....	....	....	......	691	182·46	980	8	59	270
Greener	5	1	....	304	4	1	....	750	6	2	....	1489	17	2543	......	.....	......	....
New Campbellton	21	20	2	11811	4	8	1	3396	....	....	...	......	56	15207	85	1	1	195
Broad Cove	4	....	....	555	1	....	....	234	3	15	....	5805	23	6594	......	8	......	182
Mabou	3	2	....	707	1	2	...	301	12	....	....	607	20	1615	....	2	....	193
Total	2603	1219	638	924049	517	818	165	369877	33	18	1	11688	6012	1305614	......	118	267	....

COLLIERY CONSTRUCTION ACCOUNT, YEAR ENDED 30TH SEPTEMBER, 1896.

COLLIERIES.	Levels.	Slopes.	Machinery.	Colliery Buildings.	Dwellings.	Surface Works.	Railway.	Wharves.	Prospecting.	Miscellaneous.	Total.
River Hebert	$		145	20	25						190
Springhill			9,805	7,705							17,510
Intercolonial											
Acadia			1,707								1,707
Dominion	5,562	3,666	2,452	664		341					12,685
Sydney			2,371	571	6,783	500	420	7,513			18,158
Greener	378	218		160				2,478			3,234
New Campbellton	671	20	360		350		150	50	401		2,002
Broad Cove	927			1,400	700		2,500	19,850			25,377
Mabou	849	228	503		802		527	1,434			4,343
Totals	$8,387	4,132	17.343	10.520	8,660	841	3,597	31,325	401		85,206

COAL.

NOVA SCOTIA EXPORTED TO THE UNITED STATES.

Years.	Tons.	Duty.	Years.	Tons.	Duty.
1850	118,173	24 ad.	1873	264,760	75
1851	116,274	"	1874	138,336	"
1852	87,542	"	1875	89,746	"
1853	120,764	"	1876	71,634	"
1854	139,125	Free.	1877	118,216	"
1855	103,222	"	1878	88,495	"
1856	126,152	"	1879	51,641	"
1857	123,335	"	1880	123,423	"
1858	186,743	"	1881	113,728	"
1859	122,720	"	1882	99,302	"
1860	149,289	"	1883	102,755	"
1861	204,457	"	1884	64,515	"
1862	192,612	"	1885	34,483	"
1863	282,775	"	1886	66,003	"
1864	347,594	"	1887	73,892	"
1865	465,194	"	1888	30,198	"
1866	404,252	"	1889	29,986	"
1867	338,492	$1.25	1890	50,854	"
1868	228,132	"	1891	25,431	"
1869	257,485	"	1892	13,883	"
1870	168,180	"	*1893	16,099	"
1871	165,431	"	†1894	79,837	40
1872	154,092	75	‡1895	73,097	"
			1896	174,919	"

NOTE.—The quantities given for the years 1852 to 1872 are on the authority of the Board of Trade, Philadelphia, and are probably under-estimated.

***Nine months only.**

†NOTE.—After August 1st, 1894, duty on Round Coal 40 cents, on Culm or Slack, 15 cents.

‡Fiscal year begins October 1st, and ends September 30th. (Cap. 4, Acts 1893.)

Nova Scotia Coal Sales, 1785 to 1896 (inclusive.)

Year.	Sales.	Total	Year.	Sales.	Total.
1785	1,698		1841	148,298	Forward. 1,205,1
1786	2,000		1842	129,708	
1787	10,681		1843	105,161	
1788			1844	108,482	
1789			1845	150,674	
1790		14,449	1846	147,506	
1791	2,670		1847	201,650	
1792	2,143		1848	187,643	
1793	1,926		1849	174,592	
1794	4,405		1850	180,084	
1795	5,820		1851	153,499	1,533,7
1796	5,249		1852	188,076	
1797	6,039		1853	217,416	
1798	5,948		1854	234,812	
1799	8 947		1855	238,215	
1800	8,401	51,048	1856	253,492	
1801	5,775		1857	294,198	
1802	7,769		1858	226,725	
1803	6,601		1859	270,204	
1804	5,976		1860	322,593	
1805	10,130		1861	326,429	2,399,3
1806	4,938		1862	395,637	
1807	5,119		1863	429,351	
1808	6,616		1864	576,935	
1809	8,919		1865	635,586	
1810	8,609	70,452	1866	558,520	
1811	8,516		1867	471,185	
1812	9,570		1868	453,624	
1813	9,744		1869	511,795	
1814	9,866		1870	568,277	
1815	9,336		1871	596,418	4,927,3
1816	8,619		1872	785,914	
1817	9,284		1873	811,106	
1818	7,920		1874	749,127	
1819	8,692		1875	706,795	
1820	9,980	91,527	1876	634,207	
1821	11,388		1877	697,085	
1822	7,512		1878	693,511	
1823	27,000		1879	688,628	
1824			1880	954,659	
1825			1881	1,035,014	7,317,4
1826	12,600		1882	1,250,179	
1827	12,149		1883	1,297,523	
1828	20,967		1884	1,261,650	
1829	21,935		1885	1,254,510	
1830	27,269	140,820	1886	1,373,666	
1831	37,170		1887	1,519,684	
1832	60,369		1888	1,576,692	
1833	64,743		1889	1,755,107	
1834	50,813		1890	1,786,111	13,910,1
1835	56,434		1891	1,849,945	1,840,9
1836	107,593		1892	1,752,934	1,752,9
1837	118,942		*1893	1,485,924	1,485,9
1838	106,730		†1894	2,019,742	2,019,7
1839	145,962		1895	1,831,357	1,831,3
1840	101,198	839,954	1896	2,047,133	2,047,1
				Total. . .	42,283,2

SUMMARY.

1785 to 1790	14,349	1841 to 1850	1,533,7
1791 to 1800	51,048	1851 to 1860	2,399,3
1801 to 1810	70,452	1861 to 1870	4,927,3
1811 to 1820	91,527	1871 to 1880	7,317,4
1821 to 1830	140,820	1881 to 1890	13,910,1
1831 to 1840	839,454		

* Nine months only. † Fiscal year begins Oct. 1 and ends Sept. 30. (Cap. 4, Acts 1893).

GOLD.—GENERAL STATEMENT FOR YEAR ENDED SEPTEMBER 30, 1896.

DISTRICT.	No. of Mines.	Days' Labor.	Mills.	Tons Crushed.	Yield of Gold per ton.			Total Yield of Gold.		
					Oz.	Dwts.	Grs.	Oz.	Dwts.	Grs.
Wine Harbour	2	2250	1	913	......	10	2	501	2	6
Gold River	2	3261	2	425	1	0	8	432	11	3
Fifteen Mile Stream	1	16932	1	5568	......	11	5	3151	5	0
Renfrew	1	653	1	557	......	13	23	389	10	0
Stormont	7	27699	7	22946	......	4	10	5076	0	1
Brookfield	2	9434	2	5353	......	17	15	4683	17	15
Caribou and Moose River	4	30571	4	13918	......	4	2	2864	13	1
Uniacke	4	15685	4	5092	......	14	16	3732	0	15
Sherbrooke	4	32953	5	5945	......	9	9	2796	8	9
Waverley	1	11922	1	2560	......	4	4	534	17	12
Central Rawdon	1	13073	1	769	......	13	23	531	13	0
Cow Bay	1	......	1	178	1	6	23	240	4	12
Tangier	3	2861	2	593	......	2	21	85	11	0
Unproclaimed and other Districts	7	13225	8	1056	......	10	22	577	0	4
Total	40	180519	40	65873	......			25596	14	6

NOTE.—Additional returns bring the total amount of gold produced during the year to 26,112 oz. 16 dwts. 22 grs., and tons of quartz to 67,249.

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.

MONTH.	Wine Harbour.							Gold River.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Grs.					Oz.	Dwts.	Grs.
October	2	425	17	138	80	13	9	2	682	27	151	134	6	..
November	2	225	9	55	33	6	2	2	586	23	30	40	3	17
December	2	300	12	125	70	17	12	2	300	12	9	37	16	7
January	2	175	7	35	22	1	15	1			20	33	12	..
February	2	200	8	60	35	16	9	1			18	37	16	12
March	2	225	9		..	..	..	1			18	35	12	5
April	2	200	8		..	..	..	1	253	10	23	23	14	..
May	1	250	10	155	59	1	0	2	277	11	27	23	10	5
June	1	250	10	100	56	13	17	2	263	10	24	9	17	5
July	1			120	72	1	21	2			80	44	1	..
August				125	70	10	17	2	900	36	25	12	2	..
September														
Total		2250		913	501	2	6		3261		425	432	11	3

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	STORMONT.							BROOKFIELD.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Grs.					Oz.	Dwts.	Grs.
October	7	1245	49	1234	307	16	..	1	1050	42	450	321	5	15
November	7	902	36	1531	332	8	..	1	1029	41	458	394	4	..
December	7	1943	77	850	140	..	..	2	973	39	465	561	..	..
January	7	3010	120	1770	430	9	17	2	......	....	390	350	..	..
February	7	2882	115	1621	444	6	..	2	......	....	427	424	..	..
March	7	3465	138	2479	638	8	..	2	......	....	425	330	..	..
April	7	1249	49	2465	692	19	22	2	804	32	445	*368	8	..
May	7	1326	53	2488	502	3	..	2	992	39	478	565	..	..
June	6	1592	63	2140	493	8	10	2	880	35	452	385	..	..
July	6	3115	124	2087	346	13	..	2	1216	48	470	396	..	..
August	8	3202	128	1828	341	6	..	3	1166	46	431	376	..	..
September	8	3768	150	2453	406	2	..	3	1324	53	462	213	..	..
Total	...	27699	....	22946	5076	0	1	....	9434	....	5353	4683	17	15

*This return includes 16 oz. 8 dwts. mortared from 60 lbs. qtz. by P. Dunbrack.

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—*(Continued.)*

MONTH.	CARIBOU AND MOOSE RIVER.							UNIACKE (Mount Uniacke and South Uniacke.)						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Grs.					Oz.	Dwts.	Grs.
October	6	3046	121	1581	336	15	..	3	1849	73	341	310	2	1
November	6	2966	118	1764	386	19	..	3	1364	54	446	399	8	13
December	4	2688	107	1471	371	3	22	3	1271	50	354	162	9	4
January	4	3039	121	1336	228	18	6	3	1617	64	449	304	0	4
February	4	2560	102	1103	214	7	15	3	1677	67	273	282	15	..
March	5	2478	99	1349	176	3	..	3	1487	59	542	348	2	16
April	5	2152	86	826	103	7	8	3	969	38	524	326	13	15
May	6	2388	95	1001	208	18	9	3	1264	50	588	424	10	10
June	6	2486	99	1024	257	12	22	3	1287	51	473	253	9	..
July	6	2043	81	896	196	11	..	3	1301	50	562	427	2	..
August	6	2042	81	794	197	8	15	3	1120	44	455	314	18	.
September	6	1683	67	773	186	8	..	3	479	19	85	178	10	..
Total		30571	....	13918	2864	13	1	....	15685	....	5092	3732	0	15

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	SHERBROOKE.							WAVERLEY.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Grs.					Oz.	Dwts.	Grs.
October	3	2189	87	524	249	....	....	1	1634	65	381	37	10	....
November	3	2175	87	596	265	10	....	1	1602	64	442	50	7	....
December	3	2128	85	320	101	9	....	1	1504	60	264	38	....	....
January	3	2495	99	487	222	5	....	1	1294	51	199	44	14	....
February	3	1747	69	405	141	2	....	1	1175	47	154	47	11	....
March	3	1963	78	473	188	4	....	1	1348	53	157	30	8	....
April	3	3686	147	547	218	16	9	1	1196	47	332	89	18	....
May	3	3556	142	399	159	16	....	1	1103	44	319	94	12	....
June	5	4103	164	455	213	....	....	1	1000	40	235	62	5	....
July	5	3020	120	654	405	12	....	1	....	..	20	15	16	....
August	5	2715	108	525	320	....	....	1	....	..	....	....	....	....
September	5	3176	123	560	312	....	....	1	66	2	57	23	16	12
Total	....	32953	....	5946	2756	8	9	....	11922	....	2560	534	17	12

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—*(Continued.)*

MONTH.	Fifteen Mile Stream.							Renfrew.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Grs.					Oz.	Dwts.	Grs.
October	1	1150	46	580	385	1	..	1	204	8	85	69	10	..
November	1	1110	44	567	325	17	..	1	198	7	73	55	12	..
December	1	1076	43	510	277	10	..	1	140	5	73	58	18	..
January	1	1022	40	300	211	5	..	1	26	1	40	16	..	..
February	1	1084	43	645	423	10	..	1	60	2	35	36	..	..
March	1	1060	42	625	400	..	..	1	25	1	151	93	8	..
April	1	1197	47	540	305	7	..	..	....	..	40	39	4	..
May	1	1521	60	539	323	18	..	..	....	..	60	20	18	..
June	1	1682	67	434	219	2	..	..	....	..	....	..	..	..
July	1	2114	84	......	....	..	..	..	....	..	....	..	..	..
August	1	1984	79	400	93	15	..	..	...	..	....	..	..	..
September	1	1932	77	428	186	..	..	..	....	..	....	..	..	..
Total		16932	....	5568	3151	5	..	....	653	....	557	389	10	..

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—*(Continued.)*

MONTH.	Tangier.							Unproclaimed and other Districts.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Grs.					Oz.	Dwts.	Grs.
October	1	289	11	40	12	..	..	5	1499	59	29	13	1	..
November	1	275	11	....	..	..	..	5	1411	56	138	55	3	14
December	2	234	9	....	..	..	..	5	1812	72	39	5	6	12
January	2	175	7	82	28	8	..	5	613	20	15	22	13	12
February	1	447	17	27	6	4	..	6	838	33	504	62	14	11
March	3	473	18	300	18	15	..	6	688	27	79	20	10	15
April	3	731	28	....	..	..	..	4	855	34	24	13	12	15
May	3	....	..	....	..	..	..	4	1074	42	99	93	17	..
June	3	....	..	....	..	..	..	3	1495	59	....	76	..	..
July	1	81	3	....	..	..	..	7	1172	46	77	76	15	..
August	1	78	3	90	17	1	..	7	732	29	48	131	..	10
September	3	78	3	54	3	3	..	7	1036	41	4	6	5	11
Total	....	2861	....	593	85	11	..	....	13225	....	1056	577	..	4

GOLD.

GENERAL ANNUAL STATEMENT.

YEAR.	Total Ounces of Gold Extracted.			Stuff Crushed.	Total Days' Labor.
	Oz	Dwts.	Grs.		
1862	7275	0	0	6473	156,000
1863	14001	14	17	17002	273,264
1864	20022	18	13	21434	252,720
1865	25454	4	8	24423	212,966
1866	25204	13	2	32162	211,796
1867	27314	11	11	31386	218,894
1868	20541	6	10	32262	241,462
1869	17868	0	19	35147	210,938
1870	19866	5	5	30829	173,680
1871	19227	7	4	30791	162,922
1872	13094	17	6	17093	112,476
1873	11852	7	19	17708	93,570
1874	9140	13	9	13844	77,246
1875	11208	14	19	14810	91,698
1876	12038	13	18	15490	111,304
1877	16882	6	1	17369	123,565
1878	12577	1	22	17990	110,422
1879	13801	8	10	15936	92,002
1880	13234	0	4	14037	103,826
1881	10756	13	2	15556	126,308
1882	14107	3	20	12081	106,884
1883	15446	9	23	25954	97,733
1884	16059	18	17	25147	118,087
1885	22202	12	20	28890	157,421
1886	23362	5	13	29010	128,880
1887	21211	17	18	22280	173,448
1888	22407	3	10	36178	163,772
1889	26155	6	13	39160	211,548
1890	24359	9	9	42749	160,164
1891	23391	...	...	35212	149,381
1892	21080	3	18	33633	120,761
1893*	14030	5	7	28040	97,471
1894	14980	7	13	39333	139,140
1895	22112	17	21	58082	159,564
1896	25596	14	6	65873	180,519
	627866	8	17	953364	5,321,802

—ths only.

INTERCOLONIAL RAILWAY.

Statement showing the various kinds of Coal (in tons) received from the different Mines for the use of the Intercolonial Railway, from 1st October, 1895, to 30th September, 1896.

MONTH.	Canada Coal & Railway Co. "Joggins."	River Hebert. (Wm. Hall.)	Cumberland Railway & Coal Co. Springhill.			Acadia Coal Co. Albion & Vale.			Intercolonial Coal Mining Co. "Drummond."	General Mining Associat'n.	Dominion Coal Co.
	Round.	Round.	Round.	Slack.	Nut.	Round.	Slack.	Coke.	Round.	Round.	Round.
October, 1895.........	3014	94	3602	211	......	2827	......	12	662	215	3584
November, "	3089	239	6424	1018	......	2935	49	......	2121	327	1967
December, "	3201	190	6603	1467	......	2749	78	......	4245	276	178
January, 1896.........	809	499	8774	1184	......	2606	68	......	3299	130	135
February, "	......	367	7228	1451	......	1486	.....	......	1541	232	197
March, "	273	74	8880	656	......	1556	.....	......	1716	136	212
April, "	2321	143	9546	973	....	1616	23	......	1610	413	215
May, "	3278	292	5563	281	......	1937	71	......	1762	......	262
June, "	1455	292	6529	327	......	1626	.....	......	1616	87	2270
July, "	512	77	4987	673	......	1628	64	11	900	......	409
August, "	1195	.....	5273	303	......	1833	.....	......	498	......	2468
September, "	1676	.....	3608	380	74	2123	95	......	897	......	7013
	20823	2267	77017	8924	74	24922	448	23	20867	1816	18910

INTERCOLONIAL RAILWAY.

Statement showing the number of Tons of Coal received at the following Stations, from the Mines in Nova Scotia, during the year ended the 30th September, 1896.

Destination.	Tons.	Destination.	Tons.
Halifax	37,077	Belmont	40
Dartmouth	1,582	Debert	6½
Waverley	57	East Mines	19½
Rockingham	6	Londonderry	55,537
Bedford	402½	Greenville	12
Windsor Junction	12,036	Thompson	6
Enfield	136½	Oxford Junction	6
Elmsdale	173	Oxford	502½
Milford	19½	Pugwash	817
Shubenacadie	211½	Wallace	238
Stewiacke	293	Tatamagouche	236½
Brookfield	107	Denmark	76½
Truro	11,372½	River John	432
Valley	13	Meadowville	174
Riversdale	6½	Scotsburn	384
West River	59	Pictou	10,716
Glengarry	16	Athol	18
Hopewell	1,139½	Maccan	12
Ferrona Junction	70,409	Nappan	18
Stellarton	4,019½	Amherst	11,735
New Glasgow	7,780	Aulac	292½
Trenton	40,799	Memramcook	327½
Pictou Landing	45,248½	Sackville	3,280½
West Merigomish	17½	Dorchester	1,115
Merigomish	163½	Shediac	253
Avondale	48	Point du Chene	44
James River	17½	Moncton	23,423½
Antigonish	2,251	Salisbury	999½
South River	25	Petitcodiac	541
Heatherton	63½	Penobsquis	6
Bayfield	35½	Sussex	262½
Tracadie	59	Apohaqui	13
Har au Bouche	113½	Norton	6
Mulgrave	681	Bloomfield	16
Point Tupper	91	Hampton	310
Grand Narrows	196	Rothesay	64

INTERCOLONIAL RAILWAY.—*Continued.*

Destination.	Tons.	Destination.	Tons
Coldbrook	2,423½	St. Eloie	6
St. John	929½	St. Arsene	11
Harcourt	19	Cacouna	6
Kent Junction	462	Riv du Loup	2,399
Rogersville	24	St. Henri Junction	9,017
Chatham Junction	6,587	Chaudiere	27,744
Millerton	78	Levis	3,670½
Derby Junction	6	Pt. Levis	11
New Castle	67½	G.T.R. via Chaudiere	5,517½
Gloucester Junction	608	C.P.R. via St. John	9,709
Bathurst	30½		
Petit Roche	6	Total	418,462
Jacquet River	12		
Nashe's Creek	6		
New Mills	19		
Dalhousie Junction	42½	RECAPITULATION.	
Charlo	12		
Eel River	6	Forwarded from	
Dalhousie	101		
Campbellton	75	Stellarton	190,447
Metapedia	57	Westville	14,280
Causapscal	6	Springhill	154,002
Amqui	6	New Glasgow	34,332½
Little Metis	6	Maccan	24,428½
St. Flavie	12	Sydney	972
Bic	12		
Trois Pistoles	91½	Total	418,462

PICTOU CHARCOAL IRON COMPANY, LIMITED.

BRIDGEVILLE, N. S., Oct. 17th, 1896.

E. GILPIN Esq.,
Inspector of Mines, Halifax, N. S.

Dear Sir:—

In reply to your favor of the 1st instant, I beg to state that th
the following work has been performed by our company during the yea
Oct. 1st 1895 to Oct. 1st last.

Mining Operations.—Total number of gross tons of (unwashe
ore mined and shipped.............................. 12.099
Average number of men employed, about.......... 30
working days, per man & month. 25

Blast Furnace.—Idle during the whole year.

Puddling Mill.—In operation part of one month, during which ti
we converted about 100 tons of pig iron into muck bars.

Yours respectfully,

ERNEST SJOSTED,
Manager Pictou Charcoal Iron Co., Ltd.

TORBROOK MINES.

TORBROOK, ANNAPOLIS CO., N. S., Nov. 16th, 1896.

E. GILPIN, ESQ., D. SC.,
Inspector of Mines, Halifax, N. S.

Dear Sir,—

The following is a list giving monthly output of the Torbrook Mine for the past year ending, Sept. 30th, 1896.

MONTH.	OUTPUT. LONG TONS.	MEN EMPLOYED.
October, 1895	4,374½	75
November "	4,032	82
December "	3,601	70
January, 1896	2,930	60
February "	1,648	42
March "	Nil.	10
April "	"	12
May "	1,730	37
June "	1,629	35
July "	Nil.	14
August "	"	Nil.
September "	"	"
Total..........	19,944½ tons.	Average 43.7

The water was allowed to come in the mine in July.

When work ceased the mine was in good condition, with a large quantity of ore in sight.

Yours very truly,

R. G. E. LECKIE,

THE LONDONDERRY IRON COMPANY, LIMITED.

LONDONDERRY, N. S., Nov. 28th, 1896.

E. GILPIN, ESQ.,
Inspector of Mines, Halifax, N. S.

Dear Sir,—

We now beg to furnish you with the information you ask for respecting the output and work of this Company during the twel months ended 30th Sept., 1896. Figures are as follows:—

	Tons of 2240 lbs.	Cwt
Total Pig Iron made	14892	11
Ore mined	22071	11
Limestone mined	1102	45
Cast Iron Pipes made	2492	10
Puddled Bar made	3348	7
Coke made at ovens	18812	19

Total wages paid to Miners .... $30868.
" " other workmen .... 75928.
Total number of workmen per month, about 5
of whom perhaps 175 may be considered *skilled.*
Ore consumed other than Londonderry about .... 8250 to

Any further information that you may require we will gladly se you.

Yours faithfully,

J. P. EDWARDS,
The Londonderry Iron Co., L'td.

THE NOVA SCOTIA STEEL CO., LT'D.

NEW GLASGOW, N. S.

Returns of Coke, Ore, etc., in Tons of 2000 lbs.

No. of Tons of Coke made 34,
" " Ore purchased—
from P. Charcoal Iron Co 11,461
" Torbrook Iron Co 15,282
26.7
No. of Tons of Ore imported—
From Newfoundland 20,398
" Spain 3,385
23.7

The above is for 12 months ending Sept. 30th, 1896.

Tons of Limestone used 19,
" **Pig Iron made** 21,
Tons mined by Company (iron ore) .... 13.

Average per month employed :—

Above ground—	Skilled labor	6.	Days' work	192
" "	Laborers	7.	" "	178
Below ground—	Skilled labor	23.	" "	603
" "	Laborers	26.	" "	622
" "	Boys	2.	" "	65

COKE.

Acadia,	Tons	2,914
Intercolonial,	"	2,679
Londonderry,	"	18,812
Ferrona,	"	34,336
Total		58,741

IRON ORE, Etc.

Londonderry,	Tons	20,071
Torbrook,	"	19,944
Pictou Charcoal Iron,	"	15,099
Ferrona,	"	13,237
		68,351
Imported Newfoundland,	Tons	20,398
Spain,	"	3,385
Graphite C. B. Co.,	Tons	170
Moulding Sand, Windsor,	"	235
Tripoli, Truro	"	395

LIMESTONE AND LIME.

Limestone,	Londonderry,	Tons	1,102
"	St. Annes,	"	3,280
"	Ferrona,	"	19,831
"	West Bay,	"	3,701
Dolomite,	Bras d'Or	"	757
Lime,	West Bay,	Bbls	7,320
"	Bras d'Or,	"	3,365

STONE

	Tons.	Value.
[illegible]	[illegible]	$9,520
[illegible]	.....	9,245
[illegible]	119	....
[illegible]	15	38
[illegible]	2,082	....
[illegible]	12	38
[illegible]	[illegible]	9,815

GYPSUM.

	Tons.	Value.
[illegible]	22,000	$19,188
[illegible]	95,469	95,469
[illegible]	10,955	6,098
[illegible]	2,065	1,859
	130,489	$122,614

MANGANESE.

	Tons.	Value.
[illegible]	4	$ 210
[illegible]	35	2000
[illegible]	30	1683
[illegible]	60	3015
	129	$8798

REPORT

OF THE

DEPARTMENT OF MINES,

NOVA SCOTIA,

FOR THE YEAR ENDING SEPTEMBER 30, 1895.

HALIFAX, N. S.:
COMMISSIONER OF PUBLIC WORKS AND MINES,
QUEEN'S PRINTER.
1896.

Holloway Bros., Printers, 69 & 71 Granville St.

STONE

	Tons	Value.
[illegible]	[illegible]	$[illegible]520
[illegible]	[illegible]	[illegible]245
[illegible]	[illegible]	------
[illegible]	[illegible]	38
[illegible]	[illegible]	------
[illegible]	[illegible]	38
[illegible]	[illegible]	[illegible]525

GYPSUM

	Tons.	Value.
[illegible]	[illegible]	$[illegible]
[illegible]	[illegible]	[illegible]479
[illegible]	[illegible]	[illegible]68
Victoria	[illegible]	[illegible]539
	[illegible]	$[illegible]14

MANGANESE

	Tons.	Value.
[illegible]	[illegible]	$ [illegible]
[illegible]	[illegible]	2000
[illegible]	[illegible]	1383
[illegible]	[illegible]	3025
	[illegible]	$8798

REPORT

OF THE

DEPARTMENT OF MINES

NOVA SCOTIA,

FOR THE YEAR ENDING SEPTEMBER 30, 1897.

HALIFAX, N. S.:
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QUEEN'S PRINTER.
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ASTOR, LENOX AND
TILDEN FOUNDATIONS

INTERCOLONIAL RAILWAY.

Statement showing the various kinds of Coal (in tons) received from the different Mines for the use of the Intercolonial Railway from 1st October, 1896, to 30th September, 1897.

MONTH.	Canada Coals & Railway Co. Joggins.	Cumberland Railway and Coal Co. Springhill.				Acadia Coal Co. Acadia, Albion and Vale.			Intercolonial Co. Drummond.		Dominion Coal Co.		General Mining Associat'n.
	Round.	Round.	Run of Mine.	Nut.	Slack.	Round.	Slack.	Coke.	Round.	Slack.	Round.	Slack.	Round.
October, 1896	2252	5430	......	122	386	1572	......	......	1923	......	2542	......	....
November, "	1145	3979	......	......	847	1925	56	......	1422	......	2274	......	....
December, "	1123	5632	......	......	1072	2194	34	......	1860	18	865	13	....
January, 1897	2173	2644	......	......	204	3819	32	......	4440	36	369	30	210
February, "	1142	1355	......	......	176	4731	119	......	4866	......	114	17	194
March, "	1910	6619	......	......	1202	2961	48	......	1621	......	389	......	407
April, "	2047	5997	975	......	1062	2929	30	11	480	......	269	......	453
May, "	2183	5493	......	......	302	1748	63	......	1460	......	3116	......	374
June, "	1376	4357	......	......	440	1705	14	......	1097	......	3746	......	70
July, "	1021	1681	......	......	168	1841	32	......	1328	......	3511	......	310
August, "	1959	4311	......	......	381	1638	56	......	942	......	6961	......	645
September, "	1311	3629	......	......	740	2067	54	......	1686	......	6382	......	518
	19642	51127	975	122	6980	29130	538	11	23135	54	30538	60	3181

INTERCOLONIAL RAILWAY.

Statement showing the number of Tons of Coal received at the following Stations from the Mines in Nova Scotia, during the year ended the 30th September, 1897.

Destination.	Tons.	Destination.	Tons.
Halifax	41,401½	Har. au Bouche	56½
Dartmouth	2,914¼	Mulgrave	638¼
Waverley	571	Hastings	70
Bedford	4,983½	McIntyre's Lake	7
Windsor Junction	9,548	Grand Narrows	20¾
Wellington	19	North Sydney	72¾
Enfield	230¼	Sydney	90
Elmsdale	244¾	Belmont	26
Milford	32½	DeBert	6½
Shubenacadie	282½	East Mines	71¼
Stewiacke	445½	Londonderry	8,104½
Brookfield	115¾	Westchester	12
Truro	12,154½	Greenville	19
Valley	19½	Oxford Junction	6
Riversdale	6½	Oxford	752¾
West River	26	Pugwash Junction	18
Glengarry	17½	Pugwash	480
Hopewell	1,042	Wallace	105½
Ferrona Junction	69,583	Ross Road	42
Stellarton	2,582¾	Tatamagouche	414½
Westville	6½	Denmark	78
Sylvesters	99	River John	363½
New Glasgow	7,375¾	Meadowville	24
Trenton	43,896	Scotsburn	150
Pictou Landing	46,694¼	Scotch Hill	248
West Merigomish	6	Pictou	8,541
Merigomish	205½	Saltsprings	12
Avondale	26	Springhill	123
James River	13	Athol	13½
Antigonish	2,503¾	Maccan	12
South River	18	Nappan	12
Pomquet	12¼	Amherst	13,128¼
Heatherton	52	Aulac	267½
Bayfield	61¼	Sackville	3,933
Tracadie	73½	Dorchester	1,202¼

INTERCOLONIAL RAILWAY.—*Continued.*

Destination.	Tons.	Destination.	Tons.
Memramcook	306	Amqui	18
Painsec Juuction	6	Cedar Hall	13
Shediac	424	Ste. Octave	6
Point du Chene	120¼	Ste Flavie	6
Moncton	12,981¼	St. Luce	20
Salisbury	971	Bic	12
Petitcodiac	528	St. Fabien	6
Penobsquis	6	Trois Pistoles	48
Sussex	300½	St. Eloi	12
Apohaqui	6½	Isle Verte	12
Norton	53½	Riv du Loup	2,376
Bloomfield	12	St. Henri Junction	8,743¼
Hampton	237	Chaudiere Junction	17,187
Rothesay	111½	Levis	17
Coldbrook	311	Point Levis	16¾
St. John	7,627	G. T. R. via Chaudiere.	3,678
Harcourt	6	C. P. R. via St. John	11,166
Kent Junction	354¾		
Rogersville	18	Total	363,569
Chatham Junction	7,126½		
Millerton	71		
Indiantown	6	RECAPITULATION.	
Derby Junction	6½		
Newcastle	70¼	Forwarded from	
Gloucester Junction	1,081		
Bathurst	95	Stellarton	191,630
Petite Roche	12	Westville	11,558
Nash's Creek	12	New Glasgow	37,762½
New Mills	22	Sydney	898½
Charlo	12½	Springhill	88,824
Dalhousie Junction	13	Maccan	32,896
Dalhousie	252		
Campbellton	294¾	Total	363,569
Metapedia	393		

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DEPARTMENT OF MINES.

REPORT FOR THE YEAR ENDING SEPTEMBER 30, 1897.

To His Honor MALACHY BOWES DALY, *Esquire, Lieutenant-Governor of Nova Scotia, &c., &c.*

MAY IT PLEASE YOUR HONOR,—

I respectfully present herewith to Your Honor the Annual Report of the Inspector of Mines, containing an account of the progress of mining operations, together with statistical information compiled by him from official and other returns.

I remain,

Your Honor's obedient servant,

CHARLES E. CHURCH,
Commissioner of Public Works and Mines.

HALIFAX, *December 30th, 1897.*

REPORT

ON THE

MINES OF NOVA SCOTIA,

By EDWIN GILPIN, Jr., A. M., LL. D.,

FELLOW OF THE ROYAL SOCIETY OF CANADA.

Office of Inspector of Mines,
Halifax, *December 29th, 1897.*

To the Honorable
Charles E. Church, M. P. P., M. E. C.,
Commissioner of Public Works and Mines:—

Sir,—I beg leave to submit the following report on the Mines of Nova Scotia.

The following summary shows, so far as I have been able to learn, the mineral production of Nova Scotia for the year ending September 30th, compared with that for the year ending September 30th, 1896:

		Year ending Sep. 30, 1896.	Year ending Sep. 30, 1897.
Gold	oz	26,112	26,579
Iron Ore*†	Tons	56,334	44,146
Manganese Ore†	"	129	100
Coal raised†	"	2,235,472	2,320,916
Coke made†	"	58,741	45,000
Gypsum†‡		130,489	125,000
Grindstones, etc§		30,317	32,400
Limestone†	Tons	31,171	25,000
Copper Ore†	"	10	....
Graphite†	"	175	....

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* Not including imported ore.
† Ton of 2,240 lbs.
‡ Amount exported.
§ Value in dollars.

During the period under review the work of the Department was carried on much as usual. Owing to the increased number of applications for gold areas, sickness and other causes, the office work of the Department has unavoidably fallen into arrears. Late at the close of the year an addition was made to the office force, and an attempt will be made during the winter to have all the work brought up to date. In this connection I wish to refer to the many representations that have been made to you about the inadequacy of the space allotted the Mines Department. It is entirely too small, and is the subject of continual complaint by all who do business with the Department. This most important Department should have at least twice the space it now has.

An examination for colliery officials was held as usual and the following received certificates:

Francis Burrows,	Maccan,	Manager.
Hugh Campbell,	Pt. Morien,	"
Norman McKenzie,	Reserve,	"
Geo. N. Greenwell,	Old Bridgeport,	"
Alex. McKinnon,	Pt. Morien,	"
Jeremiah McLean,	Victoria,	U. Manager.
Pat Carroll,	"	"
Murd. Morrison,	Pt. Morien,	"
Angus McKergan,	Sydney Mines,	"
Syd. Greer,	Joggins,	"
R. J. McDonald,	Springhill,	"
C. J. Albon,	"	"
Geo. R. Oulton,	"	"
Walter Johnson,	Joggins,	"
Edw. Doyle,	"	"
Jno. T. Morrison,	Westville,	"
Alex. Sutherland,	Thorburn,	"
J. P. Boutlier,	Old Bridgeport,	"
Jno. Caddegan,	Bridgeport,	"
Jno. McDonald,	Pt. Morien,	"
Dan. A. Ferguson,	Bridgeport,	"
P. H. S. Blakemore,	Glace Bay,	"
Simon Lot,	"	"
W. A. McKenzie,	Caledonia,	Overman.
Malcolm Stewart,	Sydney Mines,	"
John Britton.	Westville,	"
A. Liddle,	Joggins,	"
A. McLellan,	Westville,	"
Robt. Lauchlin,	"	"
Geo. Wright,	"	"
Wm. Gray, jr,	"	"

Absalom Beaton,	Thorburn,	Overman.
Geo. Mills,	Westville,	"
D. G. Love,	Thorburn,	"
Pat Walsh,	Bridgeport,	"
Jno. Casey,	Caledonia,	"
Neil McDonald,	Bridgeport,	"
Alex. S. McNeil,	Old Bridgeport,	"
Mich. E. McNeil,	Bridgeport,	"
Martin Weir,	Old Bridgeport,	"

In all 163 Overmans, 139 Underground Managers, and 46 Managers' Certificates, have been granted, in addition to 45 certificates of service.

An examination for granting Certificates to Engine drivers was held during the fall at North Sydney. The members of the Board are Mr. Jas. Floyd, Westville; Mr. John Barrington, Baddeck; and Mr. D. Murray, Springhill.

The following received Certificates:

John M. Francis,	Sydney Mines,	Third Class.
G. A. Oram,	"	"
Jas. J. Francis,	"	"
D. H. McDonald,	"	"
D. L. McDonald,	Sydney,	"
Thos. N. Ratchford,	Victoria,	"
Neil McDonald,	Bridgeport,	"
Ken. Morrison,	"	"
Dan. A. McDonald,	"	"
Alex. McPhail,	Dominion No. 1,	"
Dan Brophy,	Victoria,	Second Class.
J. J. McKinnon,	Sydney Mines,	"

The local Boards of examiners at the different collieries have continued to grant certificates to miners and shot firers as usual.

During the past season the Surveyors employed by the Department have been working at the extension of the base line at Fifteen Mile Stream, at Greenfield, and Upper Seal Harbor. Areas were laid off at Mount Uniacke, Harrigan Cove, Oldham, Pleasant River Barrens, Vogler's Cove, Renfrew, Cow Bay, Brookfield, &c.

The lines at Malaga were retraced. The Cranberry Head district was relocated. The Montagu base line was extended to the west. Some work was done at Sheer's Point, and at New Germany and Meander River. The Moose River district was located, corner posts put down, and the base line extended about a mile to the westward.

COAL TRADE.

The returns of coal sales during the year 1897, show in comparison with the year before as follows:

	1896.	1897.
Nova Scotia	666,403	641,308
New Brunswick	252,293	242,043
P. E. Island	94,236	62,032
Newfoundland	63,000	75,990
Quebec	795,060	875,874
West Indies	1,222	9,356
United States	174,919	106,279

The production was 2,320,916 tons compared with 2,235,472 tons in 1896.

The home sales show a slight decrease, as do those to New Brunswick and Prince Edward Island. The sales to Quebec show a decided increase, while those to the United States show a decided falling off.

CUMBERLAND COUNTY.

The operations at the Springhill Mines were hampered by a fire in the upper portion of the East Slope, which is more fully described by the Deputy Inspector in his report. The fire caused the total destruction of the hoisting and pumping slopes above the 800 feet level. The section of the mine most directly affected was isolated and the fire smothered by steam. At the close of the year the work of reopening the burned section had been commenced. It is not intended to repair the slope, but it was considered essential that the fire should be extinguished totally. The mining operations were further impeded by a strike of the workmen.

At the Joggins Mines the number two and three slopes have been connected. The sales of the County were 339,220 tons compared with 422,783 tons in 1896. The small mines worked a short time during the winter. A little prospecting has been carried on by Mr. Hickman and other Amherst parties, and the passage of the coal beds followed further to the East.

PICTOU COUNTY.

The sales from this County were 340,234 tons against 351,693 tons during the preceding year. There were only two Companies in operation, the Acadia and the Intercolonial, producing respectively 213,050 and 173,818 tons.

The operations at the mines in Cumberland and Pictou Counties, which have been repeatedly examined by Mr. Maddin, Deputy Inspector, will be found fully described by him in his report presented herewith.

WESTVILLE, N. S., 6th Oct., 1897.

E. GILPIN, ESQ.,
Dep. Commissioner and Inspector of Mines for the Province of Nova Scotia.

DEAR SIR,—I have the privilege of herewith submitting you a condensed report on the various coal mines in the districts of Pictou and Cumberland Counties, for the year ending September 30th, A. D., 1897.

McGREGOR PIT, ALBION MINES.

In my last report I stated, that they were sinking in the McGregor slope. I beg to say, this continued until last March when the mine was stopped, and the men transferred to the Third Seam slope, but they have begun sinking again in this pit, and intend to continue down into the "basin." It is now down some 5000 feet. This is about all the work doing in this mine at present.

THIRD SEAM SLOPE.

There was not much work done in this mine until last April, when they began to sink and are now down about 700 feet, the coal looks very good. On the west side another balance has been started off, driving up hill, and will soon be completed. When this balance is finished and ready for work the new lift should likewise be ready. This will afford capabilities for quite an output of coal. This is about all that has been done in this seam during the year, excepting necessary repairs and work of that description.

THE CAGE PIT SEAM.

In this mine all the work has been on the west side, except drawing pillars in one balance, and also a small amount of work done in the Fleming Seam which is four (4) feet thick, and worked on the long wall system. I am pleased to report that the pillars are now worked out and a satisfactory percentage of coal obtained from the balance of which I made mention last year, where considerable difficulty was met with in drawing the pillars. I would further add that the longwall working overlying them is worked out; this finishes another square of work on the east side.

The west side level has been driven constantly throughout the year, and is now in some 6000 feet. The coal continues good.

The operations are still continued in the balance spoken of in my last report as being driven up inside the old Cage pit levels. Driving the boards forward a large amount of coal has been won here, and the level is kept advancing. The levels in the Cage pit sinking are being driven continually when there is work, and are now in from the sinking on west side some 3000 feet, and about the same on the east side, there is one balance up on each side 1000 feet inside the sinking, this makes a block of coal on each side 1000 x 600 ft. ready to be taken out. The levels are kept going east and west. There has been considerable work done in what is called the "little drifts" which connect the Cage pit and Ford pit seams. Some four years ago there were stoppings put in, which from the effects of subsidence and water began to leak, these have been clayed and rebuilt, making them tight, and the road leading down into the Ford pit is being cleaned and timbered, this road is in the Cage pit coal. The idea is to clean and timber this down to the water in the Ford pit, and drive through from the Third seam across the measures and connect the two seams at this point, which is the bottom of the last sinking in the Third seam. This tunnel will then, when completed, connect the lower lift of Cage pit with the lower lift of Third seam, and will open up a large area of coal in this district. These pits have not been worked during the year, (for want of market I presume) as steadily as might be desirable.

THE SIX FEET SEAM, THORBURN.

Last year I reported the coal as being principally obtained from the west side. This year the west levels have been driven in some 500 feet, and the coal continues good but low. There are two balances driven up twelve bords on one and twenty-four bords on the other, it is a double balance. In my last report I further said this slope was down into the "basin," and some work done on the north-west side. This year they have driven up 270 feet on the north-west side of the "basin" where there is five (5) feet of good coal lying at an angle of 10°.

A pair of levels has been started at the foot of the "basin" and driven north-easterly a distance of 430 feet from the engine way through an average-thickness of 5½ feet of coal, which looks very good. A balance is being driven up from said levels, and is now nearly up. The underground engine which was used for hoisting out of the deep is transferred to the top of No. 1, balance, east side, making the haul some one hundred feet shorter and doing away with the use of two (2) horses. There is very little change on the east side since my last report. Considerable repairs have been made in airways and travelling ways during the year, and I may say the mine is in very good condition.

ACADIA MINE, WESTVILLE.

In my last report, I made mention of the new lift then being sunk, this lift when completed was 350 feet in depth, making the total length of slope from surface 4350 feet. This lift was driven some 20 feet wide and wooden packs 5 feet thick put in on each side all the way down, and was sunk faster and with less trouble to men or management then the preceding two lifts. On one side the packs were built close against each other and filled tightly with stone and slack coal, and by the enormous pressure became so tight that the air was conducted around it to the bottom and a return made by keeping a place open behind it. The 4 levels are turned off and the south levels are in 1000 feet. They are driven 6 yards wide with two rows of packs same as the slope, only from 6 to 9 feet of coal left in between the two levels, and at distances of from 40 to 50 feet openings are made through. The block of coal between the levels is left to form a tight partition. This mine is very fiery, and as a consequence, the air has to be kept well up to the working face. The levels on north side are in some 900 feet and are worked on the same system as those on the south side. The 4000 feet lift is kept in very good condition and the coal has been taken out from boundary line south side to a distance of 450 feet. As I stated in my last report, there are places driven up 150 feet every 280 feet and the coal taken out of the top first. About ⅓ of the coal is taken out of this lift and prospects seem very good for winning it all with very little trouble, under the present system of working, viz., longwall. At my last visit to the mine, the Barometer read 32° and Thermometer 76°, these figures appear somewhat uncommon, but when you take into consideration the great depth of the mine, viz., 4350 feet at an angle of 26° or nearly so, and further that about 1000 feet on this angle and nearly 6000 feet on the levels is carried on packs you will readily perceive the cause.

The pump house at the 2400 feet lift has been all rebuilt and some repairs made on the pump. There are now some 1100 feet of the travelling slope and 1000 feet of main slope on packs. Much care and trouble is still experienced in keeping open the return airways above the longwall workings. The levels on the north side were driven some

20 yards since my last report. The angle of the seam at this point being in the vicinity of forty or forty-five degrees and the coal interspersed with bands of slate and stone, it was deemed advisable to stop further extension along this level for the mean time.

No explosives are used in this mine, and on this side (north) twice they crossed a "fault" some twenty (20) yards thick, this was both a hard and expensive undertaking without the aid of explosives. The coal is, however, taken out of this side as successfully as in the south side, and the mine in general is in good condition.

THE DRUMMOND COLLIERY, WESTVILLE.

In my last report I spoke of a "squeeze" in this mine, on the south side from the No. 6 balance. This "squeeze" or "creep" seemed to follow the workings out, causing considerable trouble, still I am pleased to say that the coal was taken out as clean as any pillar work I have seen. The pillars are all out now on this side to No. 1 balance, and when No. 1 pillars are out there will be three hundred (300) feet left between the main slope and the "broken." There is yet the coal mentioned in my last report in No. 6 balance and No. 7 balance.

Two balances have been driven up from the 4400 feet level to the 4000 feet level, and on one of them which is but 540 feet from the face of south level, there are five (5) bords being worked. This level is in from the slope some 2900 feet, and on account of the coal being coarse, is stopped.

The mine bord on 4000 feet lift is carried on wooden butts for 1000 feet, this will probably keep open for the return from 4000 feet.

There is always great trouble and expense in keeping our returns open in our coal mines, and I agree with the management that it is better to make a permanent job at first. In this case I think this return is to all appearance satisfactory.

On north side of the 4000 feet lift the pillars have been taken out very cleanly, and are all out now except on No. 1 balance, and when this is out, there will be a block of 300 feet left in between the "broken" and the main slope.

On the 4400 feet lift two balances have been driven up on to the 4000 feet lift, and the levels extended some 500 feet. On the mine
rd the pillars have been taken out as the levels were driven in, or in
r words, there were some 500 feet of these levels on the 4400 feet
driven longwall system, they took from fifty-seven (57) feet to
(65) feet of a cut in with them and kept two places open on
for intake the other for return. One of the balances

was driven up to the 4000 feet lift in this section, and has good air, so the "butts" must be very tight.

At this mine some three (3) years ago, a new fan was erected which has given good satisfaction, and as they have commenced sinking from the main seam to the second seam the old fan will be utilised in connection with this work, to air the second seam. The shaft will be sunk some 230 feet to make such connection.

In the No. 4 slope, which has been idle for some time, they began on the 27th of September to extract pillars at No. 5 lift to enable them to meet the pressing demand for coal.

SPRINGHILL MINES.

No. 1 Slope.—At this slope since my last report many changes have taken place. Eleven hundred (1100) boxes were then raised per day, but on Dec. 24th, 1896, a fire started in the pipe bord, at a point some 600 feet from the surface, closing down this slope completely. Several consultations were held between the officials and mines department, at which meetings it was finally decided to make every exertion to isolate the fire to as small an area as possible. This was accomplished after a considerable of hard work on the part of both officials and men.

There are four (4) places driven parallel with each other, viz., fan, pipe, main and travelling slopes. The fan slope stoppings were all made tight, and a stopping placed in at the 800 feet level across the pipe slope, then a stopping put in on same level on main slope ; the air was conducted across to the east or travelling slope, and starting at the 800 feet level the stoppings were all closed to the surface. These stoppings were backed up with sand and another stopping built outside, which made double stoppings encircling the section in which the fire was. This work completed, three steam pipes were taken down the travelling way to the 800 feet level and across to pipe slope and let through the stoppings by pipes there placed for that purpose, also a pipe was erected at the mouth of the pipe slope from the surface and steam injected at a pressure of forty-five (45) lbs. for at least six (6) months. On the 14th of September the steam was stopped to allow this district to cool down, and before this report will be published I expect to learn that the fire is stamped out. Men have been employed day and night from the day the fire broke out until the present time, in this section of mine, looking after it. The temperature was taken there (3) times every twenty-four hours, and written reports made by those in charge every eight (8) hours. The pumps and haulage engine with pipes and rails are all withdrawn from this slope but the airway and levels are kept under repairs. The management intends to take those slope pillars all out, and convey the coal down hill, as there are two (2) connections by tunnels to the No, 2 slope, and the coal from the slope pillars and level pillars of the 1900 feet level will be taken up No. 2 slope.

No 2 slope, being connected by tunnels with No. 1, was closed down at the same time, with the exception of a small section. However, in a short time it was decided to prepare it for a pumping plant owing to No. 1 pumps being disabled, and accordingly work was commenced at different places in No. 2 slope brushing down and cleaning up. Iron booms were used in making such repairs, and on July 18th 2300 feet were completed, and at this point the Janesville pump which had been purchased last year for No. 1 slope was removed to this station, and for the 1300 feet level a new Janesville 28 x 9 x 36 was purchased. Two (2) new pump houses 31' x 14' were built at both stations, also 550 feet of ten (10) inch pipe was purchased from I. Matheson & Son of New Glasgow, N. S. The steam is supplied through 6" pipes to these pumps. and they are covered with asbestos. Permanent brick stoppings have been put in on both sides of pipe bord and iron doors. The travelling way and pipe way from 1400 feet to 1900 feet lift have both been stripped and cleaned up and eight (8) feet of wood packs built in with steel rails for booms.

The No. 1 slope hoisting engine has been utilised for the east return of No. 3 slope, which has all been stripped, graded and re-timbered to the 1900 feet level, and will now be used for lowering men and timber as well as a return for one side of No. 3 slope. The power is transmitted from the east or No. 1 engine house to this return about 300 yards over pullies. At No. 2 slope operations have been commenced on a new boiler house which will be 128' x 55' the roof and sides will be of corrugated iron. It is well under way now. Work on New Bank house at No. 2 slopo will commence immediately, as the framing is now on the ground, so that No. 2 will be in position shortly for a large output. All the underground work has been maintained in good condition.

No. 3 Slope.—The principal work at this slope throughout the year has been centered on 6, 7, 8 and 9, balances on 1800 feet level: driving bords and extracting pillars, although considerable coal has been taken from the 1300 feet level, which is now finished. The return was also extended from 1300 to 1900 at the extreme boundary. On east 1900 the pillars have been worked on a small scale owing to this district being short.

On January 3rd a tunnel was commenced to underlying seam, and on April 12th this seam 3', 9" was struck; on June 3rd a second opening was made for ventilation, levels east and west have been driven 1200' and chutes driven at right angles. This seam is free from stone of any kind.

On January 6th repairs on pipe bord were commenced, this place stripped, cleaned and boomed partly with steel rails, from within one hundred and twenty-five (I25') of surface to 1900 feet level, of which distance on account of the crippled condition, eighteen feet (18') more area was added.

The intake and return have received considerable attention, the east return from this slope is now being converted into a riding bord and this power will also be used to open up the sinkings in 2600 feet. This section made very little progress the first quarter of the year, on account of the accumulation of water at the time of strike. Since this was removed good progress has been made, and the levels are now in 600 feet and 800 feet respectively.

At a point 500 feet east from pipeway a chute was commenced which is now up some 200 feet. The thickness of coal is 3' 9". The west level is now in some 800 feet with coal 10 feet thick, in this level 570 feet from fanway, a balance and backhead are well advanced.

MINUDIE MINE.

This mine has been idle all the year.

SMITH'S MINE, MACCAN.

A little work was done here last winter, they sunk fifty (50) feet or so and the water was kept out until August. I think, however, that the water is near the top now. It has remained idle for the past two months.

THE SCOTIA MINE.

Work was carried on here for the first four or five months of the year, but it has been idle since. They will likely start this fall again as there is some local demand for coal.

CHIGNECTO MINE.

Nothing was done here last year.

THE JOGGINS MINES.

No. 2 Slope.—The only work being done here is on 1900 feet level, east side. There are two (2) levels and nine (9) gateways from which coal is taken. These levels have been driven during most part of the year as rapidly as possible, with two shifts. The management is pushing them to make connections with No. 3 slope for two reasons, first, water, second, air. Although the air has been very good during the past year, this connection would be of very great benefit to ventilation, and in the next place, there is no pump in No. 3 slope, and the water is hoisted in an iron tank 700 feet and let run into No. 2 slope, where the pump gets it and forces it to the surface. The amount of water in

No. 3 slope caused water to be hauled every night for most of the year until lately. The levels from No. 2 are so near through that the water is finding its way through the strata, and now it requires only a few hours every second or third night to keep the water out. The management is now pumping the water out of the 2600 feet lift in No. 2 slope, and when pumped out will start to sink in No. 3 slope and drive through to No. 3. In this way No. 2 will be kept for the pumps, the coal between No. 2 and No. 3 slope will be divided between both slopes.

No. 3 slope has at present a balance on the 600 feet lift with ten (10) places and two (2) balances on the 1900 feet lift giving 18 places. The 600 feet level has been driven a distance of about 500 feet during this year, it is now, however, idle, as the clay became very thick. Work was stopped as there was coal enough to meet the present demand. The 1300 feet is also idle for much the same reason. It was driven some 400 feet; about 50 feet from the face of the level a balance was started and was driven some 80 feet up. It is the intention of the management to start the 1300 feet level at an early date to prove the field of coal. There are two balances on the 1900 feet lift which have been just newly started through the longwall.

There are two pumps in use in No. 2 slope, but it is intended to replace them by one large pump capable of discharging the water up to the shore drain. When the connections are made between No. 2 and No. 3 slopes the expenses will be considerably reduced on ropes and machinery. Bad water for steam purposes has been the cause of another drawback at this colliery, but this is now fairly well overcome by the use of caustic soda and sodium phosphate, for the purpose of disolving the scale in the boilers. The quantity used in caustic soda, 5 lbs., and sodium phosphate, 3 lbs, put into the boiler gradually during the twenty-four hours, at a cost of about one dollar per day. The breakage of coal, going by water has been reduced 25%, owing to improvements on the wharf.

N. C. Schureman, U. J. Wetherby and Amos Terris have begun to open up their coal seam which is situated on the south side of Joggins R. R., three miles from Maccan Station, and have a slope down 110 feet and are still sinking on a two foot seam of coal, which is very promising in appearance and quality, and further have opened two other seams on same area by trial pits.

The Scotia Mine has 7 men working taking out coal for local sales.

I have the honor to remain,

Yours very faithfully,

WILLIAM MADDEN, Jr.,
Dep. Inspector of Mines.

Date of Official Inspections.

Mine.	Locality.	County.	1896.			1897.								
			Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.
Acadia Mines	Westville.	Pictou.	17	21	8	19	26	19	17	13	15	15	4	8
McGregor—Pit	Stellarton.	"	13	18	15	26	25	9	Idle		Idle			
Third Seam	"	"	15	19	14	22	23	11	15	10	16	14	3	7
Six foot Seam	Thorbourn	"	20	28	23	15	27	16	2	17	18	17	6	
Drummond Colliery	Westville	"	2	9–11	11	23	22	12	1	11	7	13	2	6
" No. 1	Spring Hill.	Cumberland	6	3	2–25	6	2	5	6	5	2	5		16
" No. 2	"	"	6	3	2	5	Idle	5	6	5	1	6		
" No. 3	"	"	7	4	3	5	Idle	4	7	4	1	6	26–27	15
" No. 2	"	"	8	6	4	7	3	6	8	6	3	7	28	17
" No. 3	"	"	8	6	4	7	3	6	8	6	3	7	28	17
Minudie Mine		"	Idle											
Smiths' Mine	Maccan.	"	9	8	5	5	4	Idle	9	7	4	8	Idle	
Scotia Mine		"	Idle	8	7	5			9	Idle				
Chignecto Mine		"		8	7	5			9	Idle				
Fifteen Mile Stream Gold Mines.		Halifax									24–26			
Lower Cove Stone Quarries												8		
Wallace Village Quarries												9		
Wallace River Quarries												9		
Bridgeville Iron Mines		Pictou.										29		11
Eastern Counties Gold Mines													9–23	
Little Liscomb														11
Port Philip Quarries														13
Wallace River Copper Mines														14
Western Gold Mines														20–30

Amount of Air in circulation per minute in the Underground Collieries, as per measurement at each official visit.

MINE.		COUNTY.	1896.			1897.								
			Oct.	Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.
Springhill Mines	No. 1.. ..	Cumberland.	43800	44300	47000	30500	32000	40100	30900	22000	25000	23000	22500	23600
	No. 2.. ..	"	60700	59400	60000	62000	Idle.	61500	62300	57800	56900	51000	50700	52700
	No. 3.. ..	"	71000	81000	82000	80400	Idle.	77500	75200	72300	73100	77200	74000	79200
Joggins Mines	No. 2........	"	23500	23700	24300	22100	20000	19700	20100	21000	20000	19700	22100	21900
	No. 3........	"	18000	19700	21200	20000	18100	21100	20000	18000	20100	19700	21200	19100
Minudie Mine..............		"	Idle.	Idle.	Idle.	Idle.	Idle.	Idle.	Idle.	Idle.	Idle.	Idle.	Idle.	Idle.
Chignecto Mine......		"	Idle.	1000	900	750	Idle.	Idle.	Idle.	Idle.	Idle.	Idle.	Idle.	Idle.
Scotia Mine................		"	900	100	1100	Idle.	Idle.	Idle.	Idle.	Idle.	Idle.	Idle.	Idle.	Idle.
Smith Mine, Maccan.........		"	1000	1200	900	Idle.	1000	800	750	1400	1000	Idle.	Idle.	Idle.
Drummond Colliery	Mines Nos. 1 & 2	Pictou	110000	105100	9600	100000	99700	92400	76500	76700	75200	76400	90700	92000
	" No. 4 ..	" ...	Idle.	Idle.	Idle.	Idle,	Idle.	Idle.	Idle.	Idle.	Idle.	Idle.	Idle.	Idle.
	Scott Pit......	"	Idle.	Idle.	Idle.	Idle.	Idle.	Idle.	Idle.	Idle.	Idle.	Idle.	Idle.	Idle.
Acadia......		"	61200	60000	60300	65000	60700	61000	62200	63500	62000	61700	60100	61000
McGregor Pit......		"	99800	120000	110000	126000	110400	12400	Idle.	Idle.	Idle.	Idle.	Idle.	Idle.
Third Seam................		"	63700	62850	61900	71200	70300	63100	67400	64800	63400	60200	63000	67000
Six Foot Seam..............		"	22000	23100	26700	27100	24000	23300	22000	21700	20900	21000	29500	....

ACCIDENTS.

No.	Date.	Mine.	Name.	Occupation.	Remarks.
	1896				
1	Oct. 3	Springhill.	Vincent O'Rouke.	Ba'khead man	Arm broken, caught by full rake on back.
2	" 20	"	Henry Buck.	Pusher in.	Collar bone broken, struck by empty rake.
3	" 28	Albion Mines.	John Smith.	Miner.	Leg broken, fall of coal from face.
4	Nov 13	No. 1, Springhill.	Donald S. Beaton.	Miner.	Rib broken and head cut, fall of coal, working face.
5	"	" "	George Williams.	Loader.	Badly shaken, caught between box and props.
6	Dec. 4	Drummond Colliery.	John Brown	Shiftman.	Squeezed by full box.
	1897.				
7	Jan. 29	Vale Mine.	James A. McLean.	Miner.	Leg broken, full box accidentally left the track and ran back on him.
8	Feb. 4	Drummond Colliery.	Fisher Crockett.	Shiftman.	Leg broken, struck by an empty box.
9	" 12	" "	Samuel Wilson.	Trapper boy.	Arm broken, crushed through a door by a full rake.
10	Mar. 22	Albion Mines.	John Beaton.	Miner.	Hurt by fall of coal from working face.
11	May 29	No. 3, Springhill.	John Burrows.	....	Killed, fall of roof stone on new balance, No. 9.
12	July 2	Joggins Mines.	John McLeod.	Miner.	Hurt, piece of coal from working face.
13	" 6	Albion Mines.	R. McKenzie.	Miner.	Leg broken, fall of coal from working face.
14	" 9	Drummond Colliery.	Joseph Hale, Jr.	Miner.	Foot crushed, fall of top coal, working face.
15	Aug. 4	Joggins Mines.	Henry Butt.	Bankman.	Severely injured, caught between cars and beams of bankhead.
16	Sept 28	Springhill.	Wm. Merritt.	Construct'n boy	Badly injured, fall of rock on main level.
17	"	"	Wm. Cunningham.	Chain Runner	Killed, fall of rock on main level.

Timber and Explosives used from 1st Oct., 1896, to 1st Oct., 1897.

MINE.	PROPS.	BOOMS.	EXPLOSIVES.					
	Feet.	Feet.	Powder lbs.	Flameless Powder lbs	Dynamite, lbs.	Roburite, lbs.	Squibs, doz.	Detonators.
Drummond Colliery	438,629	293,512 Pit Sleepers 9.55 pcs.		308				311
Vale Colliery	35,322	55,168	42,558			25 ft. fuse.	700	
Acadia Colliery	735,000	Props and Brooms inclusive.						
Albion	103,300	61.200		25,000	Fuse ft. 24,700			
Joggins	254,744 Sleepers, 2,453	43,200 Boards, 5,000	4,000		10			

STATEMENT.

Timber used at Springhill Collieries from 1st October, 1896, to 30th September, 1897.

BOOMS :—

22′ x 12″	18′ x 13″	14′ x 10″	14′ x 6″	12′ x 9″ and 10″	10½′ x 9″
4	40	850	19369	1473	3607

PROPS :—

12′ x 5″	10′ x 5″	5½′ x 5″
34836	8344	25541

Pine	2,966 feet
Plank	119,587 "
Boards	88,905 "
Scantling	125,241 "
Spruce Timber	55,223 "
Rollerwood	2,000 "
Hardwood	23,335 "
Pit Pinning	780 doz.
Slabs	990 "
Cap Pieces	34,880 "
Dynamite	400 lbs.

NOTE.—September approximated.

I append here notes of a visit by Mr. Maddin to some of the Cumberland County stone quarries.

I visited Lower Cove quarries, Rufus Hurbert, was manager with 40 men employed. This Company exports most of the large grindstones, or water stones as they are called, manufactured by them to the United States. The stones manufactured by the Company vary in size from 6 inches diameter × 1 inch breadth to 84 inches diameter × 15 inches breadth. Scythe Stones, Holly Stones for use on board ship, and Currier Stones for use in Tanneries, are likewise items in the manufacture at this quarry. All these are manufactured from a blue grit reef 75 feet thick composed of layers from one inch to five feet thick. The quarry is situated about 4 miles from the Joggins Coal Mines on the Cumberland Basin with good shipping facilities.

On July 10th, 1897, visited freestone quarries at Wallace Harbor, operated by the Freestone Company, John Stevenson, manager, with from 10 to 15 men employed. This quarry is composed of gray stone for say about 30 feet down, then a blue belt of about 30 feet thick. It produces a very fine quality of building stone capable of resisting the action of water. They manufacture all sizes of stone varying in weight up to 8 tons, and much larger and heavier stone could be obtained provided they had adequate machinery to handle them.

Another Company known as G. P. Sherman & Co., whose property adjoins that of the last named Company, are working with T. C. Dobson, manager, and employ from 12 to 18 men. New York is their chief market. These two last mentioned quarries are situated about ⅓ of a mile from the shipping pier, at an elevation of from 90 to 100 feet above water level. If these two quarries, in the principle of economy, were operated under one management, and roads laid to the shipping pier, for there is ample descent to run the stone to the pier by gravitation, I think the financial result would be vastly improved, as there is a beautiful harbor with I am informed sufficient water to permit ships of one thousand tons to float. The stone on both quarries is the same in quality and size and has the reputation of being an excellent building material.

Some 4 miles further up the Wallace River which is navigable for that distance at least, are situated the oldest worked quarries probably in the Province, for work was began here in 1809, and is still in active operation, Many of the stones in the Provincial building Halifax were taken from these quarries which are known by the name of the Battye quarries. George Battye is President and Manager, and from 30 to 40 men are employed, the stone is called the Olive stone. On the 10th July when I visited the quarry, stones were lying there dressed, of the following dimensions 3 ft. 6 in. × 3 ft. 6 in. ×. 10 ft. 6 inches long, ft. of this stone in the reef.

Schooners of from 250 to 300 tons can load direct from the quarries, there is likewise a siding from the I. C. R. to the quarry, thus they have excellent facilities for shipment either by water or rail. Much larger stones could be produced if they had machinery capable of handling them. The quarries are situated about one hundred yards from the Short Line Railroad on the bank of the Wallace River.

On September 13th, I visited Port Philip Stone Quarry, McLeod and Embree are the owners, here there is a working face of some 20 ft. producing stone ranging from 4 to 6 x 20 ft. and from 1 to 6 ft. thick and from 4 to 20 ft. long, of a brown color free from iron rust, apparently of a good quality and capable of resisting the action of water and of the weather. This quarry is situated on the side of Port Philip and the stone is taken from there to Pugwash Harbor where they can ship either by water or rail. They are increasing their steam power to facilitate the handling of larger stone and have at present a good pump and engine. This stone ledge has been tested for upwards of ½ a mile or thereabouts or until it passes into lands of Mrs. Costillo, and maintains its quality and quantity, proving very conclusively there is a large amount of this fine stone in this district. Frank Dobson is manager with 33 men employed. They can conveniently handle 500 tons of stone more per day, and intend to enlarge the capability by increasing the power of their plant.

CAPE BRETON COUNTY.

The sales from this county amounted to 1,321,653 tons compared with 1,257,362 tons in 1896. Two Companies furnished the principal amounts, the Dominion and the General Mining Association, which produced respectively 1,252,484 and 267,626 tons, the North Sydney Mining and Transportation Company not being yet in full working order. The sales to Quebec showed a notable increase ; those to other points showed generally a decrease. The remarks made in the last report made by Mr. Neville, Deputy Inspector, on the subject of pillar coal have roused the attention of the Mine Managers and it is anticipated that experiments will shortly be underway to ascertain the readiest method of extracting the greatest possible per centage of coal at the first operation. The gradual extension of pillars over a large area even with a moderate depth of measures is almost certain to bring on a crush, which can with difficulty be stopped.

BRIDGEPORT, Oct. 29th, 1897.

E. GILPIN, JR., ESQ.,
Deputy Commissioner and Inspector of Mines.

DEAR SIR,—I beg leave to forward you a short report of the local mines in the Island of Cape Breton for the year ending September 30th, 1897.

GOWRIE.

Work has been dull at this Colliery during the most part of the year; The bore hole mentioned in my last report which was put down to the dip of the workings has been a success, and a Knowles pump has been placed at the bottom of the hole and is now pumping all the water that the pit makes below the upper tide level. Size of pump, Steam cyl, 20″ x 36″. Water cyl, 10″ x 36″. Another Rand Air Compressor has been put on the surface in order to assist the one already there, in supplying power for working the pump. The low levels going East and West have been extended and rooms broken off.

CALEDONIA.

Work has been fairly good at this mine during the greater part of the year. The west levels, No. 4 west deep levels and No. 5 east levels were all continued as usual during the year. Also the east deep was driven eight hundred and fifty feet, and levels turned away east and west at that point. No. 2 east level was extended about four hundred feet, and a Longwall section laid off with two hundred feet face by four hundred and sixteen feet. A barrier of forty feet is left between this section and the level and old workings to the rise. This section is intended to be worked by the Sullivan Longwall Machine. There has been put in an endless haulage system, to be worked by single track, for the purpose of hauling the coal from the Longwall Section.

The four inch air pipe on the east side has been replaced by six inch pipe. On the surface two picking belts and two shaking screens for the purpose of cleaning the coal from brass and splint have been put in and give every satisfaction.

HUB.

The main deeps have been driven to the extreme end of the land
area [illegible] were then turned on the full dip of the seam to go under the
sea. [illegible] that point they are now about eight hundred feet out under
[illegible] seam is maintaining its regular average dip, and the roof is
[illegible] than under the land, and the coal has improved both
[illegible] ness.

[illegible] ned me that the assays from the faces of the deeps gave less ash and sulphur than in any other part of the mine. There is a good barrier of coal being left between the present land area workings and the sea shore.

The old level at the burnt mines was opened and the water run off, and a survey made of the old workings, which has been put on a plan. A new pump has been placed in the deeps for the purpose of pumping to the upper lodgment. Also a new engine was placed at the pit bottom which hauls the coal from the deeps.

On the surface a slack screening apparatus has been added to the plant by which the slack coal can be graded into Nut, Pea, Slack and Duff coal. The management have decided to erect a Fan which is much needed.

STERLING.

No level was hoisted out of this mine during the year. It was decided by the Company to take out the rails, material, pumps, etc., and allow the pit to fill with water. This has been done, but before closing an accurate survey of the faces was made, and timbered where required and the pit left in good order.

INTERNATIONAL.

In this mine levels and headways have been extended in the ordinary course of workings and rooms broken off. The travelling road on the north side of the pit became so bad from horses cutting up the bottom that at last it was considered unsafe and not fit for men to travel therein.

It was brought to the notice of the management to have a new travelling road made. This they have consented to do, and a good new travelling road has been made on the south side of the pit connecting with deep roads, which I hope will give satisfaction.

On the surface a new slack elevator has been erected in connection with the bank head. The slack pockets under the screens are emptied into a tumbling cage, which is hoisted to the top of the bank where screens have been placed and dumped on those, where the Nut, Pea, and Duff are separated and led to their respective cars or pockets.

RESERVE.

On surface a new Chandler Fan 15 feet diameter by 8 feet 9 inch wide, with an engine to drive it has been erected near the old furnace up cast shift. This fan gives about 150,000 cubic feet of air per minute, water gage 1¾ in 95 revolutions per minute.

The up cast shaft is found to be rather small, and it is the intention of the management to enlarge it this winter so as better results can be had from the fan which is capable of giving a greater quantity of air.

The smoke stack was built 16 feet higher which makes it in all 67 feet. A new slack elevator was erected to hold and seperate the different grades of coal, also two new picking belts and two shaking screens were put in which work satisfactory Air pipes were laid from the Main slope to the French slope to drive the coal cutting machines on that side, and also to drive the pumps, doing away with steam in the pit.

The endless haulage was extended on the low south level for a distance of 2,800 feet. The main slope deeps were driven 1,000 feet and a landing made on both sides at that point.

The French slope deeps were driven 700 feet. Levels have been continually driven on both sides of the pit during the year. Ventilation is good throughout the pit, which is kept well timbered and I may say in good condition all through.

BRIDGEPORT.

The output at this mine at present is all confined to one road, viz., the South deep which has been driven in all 2,556 feet and intersected the Main slope from the Reserve Mine. Levels and headways have been driven in the ordinary way to win out coal.

It is the intention of the management to open up another district on the north side of the pit this fall, and they are at present driving a set of deeps which are down about 300 feet at date. It is intended to drive them down 1,000 feel below the old water level leading to the shore.

The furnace at this colliery has been abandoned, and the fan that was at the Reserve Mines has been placed at the furnace or up cast shaft, and is giving every satisfaction. The air having increased from 20,000 to 60,000 cubit feet per minute. A Northy pump has been placed at the brook to pump water to the pit a distance of 1,600 feet. 6 inch pipes were laid on the surface, as it was found that the present column of 3 inch diameter were too small. The fire pump that was doing this work has been set up at the pit where it will be in readiness in case of fire. It also pumps water to Dominion No. 1.

DOMINION NO. 1.

The north deeps have been driven 1,600 feet, making a total distance from the pit bottom of 3,600 feet. The south deeps have been driven down 1,500 feet in all from pit bottom 2,500 feet. No. 2 south level has been driven about 2,300 feet, and No. 4 south level about

500 feet. No. 1 north level has been driven this season about 1,500 feet and No. 2 north level about 550 feet.

A travelling road has been driven 600 feet to the rise coming out on the old Bridgeport water level and from thence through the old workings to the surface, making a very convenient way for the workmen to go to and from their work. A large lodgment has been made below the shaft. Two shaking screens and two picking belts have been put up which give great satisfaction in cleaning the coal. A wash house has been built and fitted for the men. One new dwelling for miners has also been built.

VICTORIA.

At this Colliery nothing in the way of improvements have been done. The East Levels have been kept going during the year, and are now about 4000 feet from the pit bottom. From this level the whole output of the Mine is derived.

The west section has been abandoned and the greater portion of the pillars drawn from the rise workings. A good pillar or barrier of coal is left on the high side of the level in order to save it from a crush from the broken strata to the rise. The water discharge pipes from the Northy pump have been replaced by wooden ones, which it is thought will resist the action of the pit water.

CAMPBELLTON.

During last winter the slope was retimbered, and a new travelling road made up to the upper water level leading to the sea shore.

I trust that the management will have this travelling road driven through to the surface. · The main deeps have been driven down about 300 feet and levels turned off north and south and rooms won. There has been a remarkable change in the appearance of the coal to the dip. Where there was formerly to the rise about four inches of roof coal or splint above the coal, this has thinned out to about one inch in thickness. Also the seam is found to be quite hard, and in many places through the seam, but especially towards the bottom. Pieces of coal hard and firm resembling Cannel coal are showing from three to eight inches thick. No trace of this has been seen to the rise.

About one fourth of a mile from the pit a branch has been laid off from the main railroad to what is called there the Dolomite Mine. This lead or seam is about 150 feet in width by 250 feet high, apparently all the same quality. There is no telling how far this seam runs back into the mountain, it is said to be the best quality known of the sort.

BROAD COVE MINE.

On the 26th day of August, I visited Broad Cove and found about 50 men employed under the supervision of Mr. Penn Hussy, building a railroad, wharf, breakwater, etc. The breakwater at that date was about 450 feet in length with a double row of piles driven on the inside and the outside cribbed with brush and large stone, some of them would weigh four tons. The top is all floored over skin tight with hardwood logs hewed to six inches thick. The inside is sheathed over also with hardwood plank.

A channel eight feet deep and about 650 feet long was dug out from the pond. To do this a powerful Dredge boat of seventy horse power has been employed and two Scows, one capable of carrying 350 tons, and the other 240, also a Tug boat to row them in and out. A wharf is being built on the eastern side of the pond for shipping. From there to the pit a distance of two miles, a Narrow Gauge railroad has been made.

A seam or level about 13 feet thick is opened and a level driven in about 175 feet. A narrow place driven to the dip about 70 feet and below the level of the brook have proved the coal to be much better. Further up the brook and below this seam is another called the Seven Foot Seam. This seam is opened on both sides of the brook and a level driven in on the west side. This level is in about 400 feet and an airway driven through the crop of the coal to the top of the bank of the brook for ventilation. On the east side of the brook two levels have been driven about 200 feet each, and two rooms opened about 30 feet each, of the upper one the coal looks well in this seam, and all the pit works are well timbered.

SYDNEY MINES.

A set of four Lancashire Boilers of one hundred and fifty horse power each have replaced six of the old fashioned boilers. One Ingersoll Duplex Air Compressor 14½ × 18 has been set up at Princess Pit and a Multitubular Boiler with a circular brick chimney of sixty-nine feet in height has been erected to supply steam for the same.

A new bank Pooley's Weigh Scales has been put up to replace the old one. Fifteen new 6 ton coal cars have been added to the stock, also 6 new workmens houses and one office for the management.

In July the Company started to sink a shaft of 13 feet diameter to the No. 3 seam, which will be reached at the depth of about 500 feet, the sinking plant comprises two Monarch Economic Boilers, one Hoisting Engine. 18½″ × 36″ direct acting, with eight feet drum, one Duplex Rand Compressor, 14″ × 14″ × 22″, one Worlthington Duplex Sinking Pump, one Ingersoll Air Drill and Bar.

During the year the use of naked lights in this colliery has been abolished and Marsaut Safety Lamps of the latest and most approved type have been adopted in their stead. Six hundred of these safety lamps are now in use, a commodious fire-proof lamp house built of brick with concrete floor has been provided at the surface, the lamps are tested and gauges cleaned by compressed air.

In the pit the main deeps north and south have been extended 800 feet and 900 feet resectively. A new travelling road of 3,000 feet has been made on the north side in No. 2 district. The self acting incline of 2,200 feet in No. 2 district south is giving good satisfaction· Another air winch has been placed in No. 2 district north a distance of 1 mile from the pit bottom. A good change is being made in regard to the horse stables, they are being moved from the pit bottom down into the workings a distance of about 4,500 feet on each side of the pit, the one on the north side is now completed and holding 30 horses.

The drinking water for these horses is brought from the reservoir on the surface to these stables through 1 inch wrought iron pipe taken down the shaft. On these pipes at certain distances are placed cocks from which water can be taken to sprinkle the roads when dry and dusty.

NORTH SYDNEY MINING AND TRANSPORTATION CO., LIMITED.

A larger and more substantial wharf has been built to replace the former which was partly destroyed by the heavy seas. A 40 horse power semi-portable engine and boiler have been put up between the wharf and the level mouth, with a house erected over boiler and engine. Also a bank has been erected with screens to separate the large coal from the slack.

The engine hauls the coal from the level to the top of this bank, where it is dumped into the screens. The levels have been driven through the summer and are now about 950 feet from the entrance.

An airway was driven to the rise to a shaft which acts as an up cast. There is no fan or furnace at this mine yet.

I am yours most obedient,

J. NEVILLE,
Deputy Inspector of Mines.

Accidents in Cape Breton Mines year ending September 30th, 1897.

DATE.	MINE.	NAME.	AGE.	OCCUPATION.	REMARKS.
Oct. 15, 1896.	Bridgeport	Angus McNeil	23	Miner	Two ribs broken, caught between loaded box and roof.
Dec. 5, "	Dominion No. 1.	John J. McNeil	26	Loader	Hurt by piece of coal falling on him from junk.
Jan. 4, 1897.	Victoria	Peter McDougall	19	Loader	Killed on balance, run over by Cuddy.
March 5, "	"	James McLellan	62	Miner	Killed by fall of coal from pillar.
April 9, "	Dominion No. 1.	William Spencer	22	Shot firer	Fatally burned by compressed powder ignited from spark of lamp.
April 9, "	" "	Angus Gillis	32	Shot firer	Burned on hands and face from the above explosion.
May 5, "	Reserve	John Lund	40	Miner	Fatally injured, caught between coal box and pillar.
May 25, "	Sydney	James Burrows	40	Miner	Burned on back of head and injured by blast going off almost immediately after the fuse was lighted.

May 10, 1897.	Caledonia......	Angus McIntyre....	23	Loader...........	Arm broke, caught between coal box and prop.
June 10, "	Hub	John McDonald....	30	Miner.............	Burned on face and hands from ignition of compressed powder.
June 10, "	"	Donald McLain....	36	Miner.............	Burned slightly from above explosion by spark off lamp.
July 6, "	Reserve......	Edward McDonald..	35	Shot firer..........	Burned by compressed powder ignited by spark off lamp.
July 6, "	"	Joseph Gardner....	28	Shift Man	Burned by the above mentioned explosion.
July 6, "	"	Dougald Menzie....	20	Shift Man	Burned by the above mentioned explosion.
July 9, "	Dominion No. 1.	David Hall........	49	Shot firer..........	Burned by compressed powder ignited whilst stirring shot.
July 20, "	Sydney	Hugh Dickson......	49	Miner.............	Rib broke by fall of stone from roof.
July 20, "	"	William Harvey....	40	Miner.............	Leg broke by fall of coal from face.
Aug. 3, "	"	James McPherson ..	39	Miner.............	Fatally injured by piece of coal falling on him whilst hauling.
Aug. 16, "	Dominion No. 1.	Robert Cuddy......	28	Loader...........	Hurt on head by piece of coal falling on him from junk.

'mount of Cubic Feet of Air Per Minute Circulating through Cape Breton Mines during the Year ending September 30th, 1897.

MINES.	Oct.	Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.
Caledonia	92000	92310	96100	91750	83100	89150	79600	67960	67900	69260	80000	81421
Bridgeport	32000	32550	30000	25000	19700	12900	11810	20000	19500	61360	66000	60100
Reserve	42000	48700	40000	50100	47880	48200	47909	40000	119200	129000	135000	145500
Hub	22100	27960	25000	29210	29870	21510	16900	20600	21500	20540	18540	27000
Sydney	78000	84989	86556	85322	92129	77080	77760	77837	75783	88740	79325	82500
Dominion No. 1	70600	71000	67250	69200	59850	60000	61000	73080	58200	57800	59300	58600
International	86600	70000	67250	78200	70000	50000	42000	58097	68000	70000	70600	78900
Gowrie	30000	30000	29800	27600	39900	21000	30100	30000	37100	26920	28200	29800
Victoria	58000	50000	60010	59500	57900	59806	57780	59700	58000	67040	59200	60100
Campbellton	9000	9200	7890	8900	......	7000	7210	7960	8745	6970	9970	10000
N. Sydney Transportation Co.	......	5200	6000	......	......	......	......	......	5000	6400	7000	6980
Broad Cove	......	......	......	......	......	......	......	......	......	......	3960	......

Dates of Visits Inspecting Mines Year ending September 30th, 1897.

MINES.	Oct.	Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.
Caledonia	5	17	21	15	15	9	16	11	24	13	19	3
Bridgeport	15	4	2	18	6	16	6	6	10	2	9	4
Reserve	19	16	15	19	4	11	5	5	17	6	17	23
Hub	21	10	10	16	3	8	10	10	14	7	4	6
Sydney	24	7	12	21	10	15	21	21	12	10	7	11
Dominion, No. 1	26	18	3	27	17	29	17	17	9	20	16	8
International	27	3	14	20	19	25	4	4	23	12	18	9
Gowrie	28	13	10	26	16	19	31	31	16	14	20	7
Victoria	29	12	22	4	2	6	27	27	25	15	21	15
Campbellton	31	21	19	23	13	13	29	26	17	17	23	18
N. Sydney Transportation Co.	......	28	11	......	......	......	......	......	......	30	6	14
Broad Cove	......	......	......	......	......	......	......	......	......	......	26	......

MISCELLANEOUS.

During the past year prospecting work was done with a diamc drill on areas at Black Brook owned by Messrs. Murray, Harold, et It is reported that some discoveries of value were made.

Mr. Moseley continued his explorations, and in the fall his work v visited by Mr. Fletcher of the Canadian Geological Survey. He fou that in addition to the roof coal at the outcrop, somewhat erroded a broken, some twelve inches in thickness, there were five feet inches of coal of uniform quality. This coal as opened near Cochra Lake is not far from the line of extension of the limited outcrop the Tracey seam at the head of Cow Bay. Some authorities conte that it is the equivalent of the Mullins seams. At present lit definite can be said on this point beyond the fact that the exploratio of Mr. Moseley have shows a valuable coal bearing horison ma thousands of feet below the so-called productive strata. This subj was more fully referred to by the author in a paper on the Undevelo Coal Fields of Nova Scotia read before the Nova Scotia Institute Science. From the work done it would appear that this seam of l Moseley's will add many millions to the present available coal tonn of the Sydney district. The following analysis was furnished by M Moseley:

Volatile Matter	38·45
Fixed Carbon	55·80
Ash	5·75
	100·00

In Victoria County the Messrs. Burchell continued working. Th report that the coal improves in quality to the dip, and that there a other valuable seams on their areas. A report on their operatio will be found in Mr. Neville's memo. of collieries inspected by h during the past season.

At Mabou a few tons of coal were mined and sold locally. Broad Cove Mr. Hussey has continued to develop his proper energetically. The breakwater has been strengthened and the chann into McIsaac's Pond so far completed as to allow of the shipment coal. It is intended to deepen and widen the channel so that steame of a large draught can enter. The position of this harbor should gi its freights an advantage for points in the Gulf of St. Lawrence, et

GOLD.

The returns for the year ended Sept. 30th, show that 26,579 oz. 19 dwts. 21 grains were extracted as compared with 26,112 oz. 10 dwts. 22 grains, (page 61 report 1896). There are a few returns not yet received which will bring the total up to about 28,000 ounces. The difficulty, referred to last year, in getting prompt returns from those engaged in gold mining still continues.

The following general summary shows the yield by districts:

GOLD.—General Statement for the year ended September 30th, 1897.

DISTRICT.	No. of Mines.	Days' Labor.	Mills.	Tons Crushed.	Average Yield of Gold per ton.			Total Yield of Gold.		
					Oz.	Dwts,	Gr.	Oz.	Dwts.	Gr.
Wine Harbor	1	1293	1	611	....	10	9	318	3	2
Gold River	2	829	2	287	1	17	20	542	19	5
Fifteen Mile Stream	1	17533	2	9158	....	6	5	2856	18	....
Stormont	3	43486	4	28700	....	....	13	6209	18	10
Brookfield	1	18664	1	8076	....	5	7	3366	10	....
Caribou and Moose River	5	25404	4	9324	....	5	23	2781	13	19
Uniacke, South and Mount	4	4985	4	2344	....	19	9	2274	4	4
Cochran Hill, Goldenville and Crow's Nest, (Sherbrooke)	5	561110	6	12659	....	6	13	4181	18	19
Waverley	1	5231	1	806	....	13	7	461	8	....
Cow Bay	1	....	1	717	....	15	15	560	19	19
Tangier	1	4060	1	372	....	16	2	299	14	....
Central Rawdon	1	13731	1	963	....	4	3	199	12	....
Killag	1	228	1	112	3	10	8	393	19	....
Montague	2	7696	3	956	1	....	6	1177	1	7
Oldham	......	....	1	308	....	18	17	282	5	6
Leipsigate	2	3451	2	167	....	7	8	82	7	....
Unproclaimed and others	3	4554	.....	929	....	13	15	625	18	2
Total	34	207255	37	76559	....	....	....	26595	6	21

Note.—Additional returns bring the total amount of Gold produced during the year to 26,963 oz. 14 dwt. 2 gr.

I append the report of Mr. Maddin who visited a number of the gold mines last summer.

WESTVILLE, N. S., 1st Dec., 1897.

E. GILPIN, ESQ.,
Dep. Commissioner and Inspector of Mines:—

DEAR SIR,—I have the honor to submit to you the following report on the gold mines of the Counties of Guysborough, Halifax, Queens, Lunenburg and Hants.

On June 24th to 26th I visited *15 Mile Gold Stream District* and found the Egerton Gold Mining Company working, with G. F. McNaughton as manager, and Lauchlan McLean, underground manager, with 40 men employed. The deepest shaft is 260 feet deep and situated near the eastern end of the belt which is 14 ft. thick, of milling ore. There is also a shaft west of this on the Nonpareil belt, 16 ft. of milling ore, and the north belt which has 15 ft. of milling ore. Those three belts are connected by tunnels driven across the strata. The walls or ribs between the belts cause considerable trouble to keep them safe, as the measures or strata of which they are composed are very much broken, and full of joints. These walls are only from 21 to 15 ft. thick, and the angle or dip is some 75° to 85°.

The management are leaving pillars of ore 25 x 20 ft. to strengthen the mine, and as the ore belt is from 14 to 16 ft. thick they drive a place through the pillar 8 x 8 ft. leaving the remainder of belt as a support or leg to the wall. Without mentioning other small belts or lodes that have been cut on the property I am of opinion that there is exposed to view here the largest body of milling ore that I have seen in the Province. The mine is in very good condition and very free from accidents during the past year. The mill employed has 30 stamps, and is lighted by electric lights. Since my visit last year 3 or 4 large frame houses have been erected for tenements. Isaac McNaughton and 3 associates are doing some prospecting in this district. Improvements appear in almost everything excepting the main road, the only means of access, which with the exception of a couple of miles next to the mine is in a very bad condition.

It is likely that the shaft sunk on the Nonpareil belt may be made the principal working shaft, as the manager talks of sinking it deeper, and as the strata between the ore belts is only some 12 to 16 feet thick, he thinks of carrying on all his work by means of the shafts. The probabilities are in favor of another large belt near by, as the anticlinal is quite visible, but instead of forming a N. and S. dip the fold has gone over and all the belts are dipping north so that it appears reasonable to conclude that the corresponding belt to the Nonpareil will in all likelihood be south, because there are 3 belts and no south dip, which causes me to think that the 4th belt will be in close proximity; there being a complete fold on the strata, the hanging wall of the one belt forming the foot wall of the other. The Nonpareil belt has been proved for some 200 ft. in depth.

GUYSBOROUGH COUNTY.

Isaac's Harbor. On August 10th, 1897, I visited the mine of the Richardson Gold Mining Company at Gold Brook. A. B. Cox, manager, and William Welsh, underground manager, 65 men employed. The shaft on the south side is down 195 ft. and on the north side 125 ft. The Belt is 10 ft. thick and is worked from north to south, around the apex. They are now raising a place on the east side to send up the ore, so that when it is finished there will then be 3 shafts for taking ore out. The Belt is worked from south to west 300 ft., and from north to west 200 ft. The circle around from face to face is 1300 or 1400 ft, but there is on the west side some ground not yet opened up, some of which may probably be barren, as it is possible the belt may be cut off on the west side. There are two pumps, one on the north side and one in the south shaft. Steam drills have been put in since my visit last year. Pillars are left in for support as on account of the size of the belt it is found necessary to have something more than the ordinary timber to keep the mine safe. I see very little difference in the mine from last year, excepting as they descend the operations become more extensive. The mine appears to be in good condition.

In the *North Star Mine* no work is being done at present. South of the North Star, George Johnston and Freeman Hudson have a property comprised of 19 areas all in one block, in which are two belts, one 4 ft and the other 5 ft thick, both of which exhibit gold; also a small lead two inches thick which is very rich. There are several other leads not sufficiently opened as yet to permit me to say much about them.

East of the North Star lead is what is called the Burke lead, 3 inches thick. James McLellan with some others have it leased and are at work upon it, and are down 216 ft. on an angle of 16°. Only four men were employed here at the time of my visit.

On August 11th, 1897, I visited the mine of *The Country Harbor Gold Mining Co., Limited,* but it was idle.

Hopewell Mining Co., Country Harbor. J. C. Mason is manager at the mine with 18 men employed. West of the big belt, which is 10 ft. thick, there are now known to be at least five belts or leads, varying in size from 18 inches to 7 ft. thick. The old shaft has been pumped out to a depth of 40 or 50 ft. and a level driven west through 7 ft. of whin to the 5 ft. belt, on which they intend to sink and to drive west cutting the other belts and leads. Across the gulch there are two shafts sunk on a lead west of the old mine, one of which on the north end is down 40 ft. and the other on the south end is down 30 ft. Those two shafts cut two leads, one 4 inches thick on the foot wall and the other 6 inches thick on the hanging wall, these two leads are tunnelled south 85 ft. and north 20 ft. The work done is well timbered and appears in good condition.

Country Harbor. David McQuarrie has four men at work on the Cook and Johnston property, north of the Stellarton Mine, and has 18 inches of crushing belt. He is down 75 ft. and has drifted some 95 ft. east and west. This place is looking up again.

Forrest Hill District. The McConnell Mining Co., The Phœnix Gold Mining Company, David Archibald, manager, Michael Daly, underground manager. Here 20 men are employed. The level is 13 inches thick, with two shafts sunk on it. The one at the east end is down 50 ft and the one at the west end 40 ft. The distance stopped east is 22 ft. and west 154 ft. connecting the two shafts underground. This is a fine looking lead with solid walls and the mine is well timbered. On the Ophir belt which is 3 ft. thick some work has been done, as well also as on the Camp lead which is four inches thick. There have been several other leads cut on this property, and preparations are now being made for the erection of a mill. An office and 3 dwellings have been built. The prospects here are promising.

Forrest Hill District, Modstock Gold Mining Co., W. J. McIntosh, manager, Frank Tumey, underground manager, 60 men employed. On the Salmon River lead, which is 2 inches thick, there are 5 shafts, varying in depth from 35 to 85 ft., and 600 feet of stopping. This lead has been proved for 1400 ft., of which 600 ft. is worked and 800 feet tested by sinking trial pits. Also on the Ophir lead which has 10 inches milling ore, there are 5 shafts varying in depth from 80 to 135 ft., and 888 ft. stopped. On the Mill lead which is two inches thick there are two shafts, one 140 ft. deep and the other 60 ft. not much work has been done on it as yet. The Barrel lead lies 200 ft. north of the Mill lead, and considerable work has been done on it on the surface, the greatest depth being 12 ft. in the rock. Several leads lying between the Mill lead and Barrel lead have been stripped. Then again south of the Ophir lead is another lead 13 inches thick known as the new lead in which there are 3 shafts; the one on the west end is 100 ft. deep, and that on the east end 70 ft. These shafts are all well timbered and 75 ft. of tunnel has been driven east and west. Then 200 ft. further east there is another shaft sunk to the rock and timbered. No work is being done on this lead at present but the manager intends starting this month. The mill house has been remodelled and a new 35 horse power engine and a new force pump obtained. The engine and pump were supplied by I. Matheson & Co. of New Glasgow, N. S. The mill has been remodelled and new stamps set in. This Company has 650 acres of beautiful wood lands. The road into the mines is in good condition, although outside the roads are very bad for some 6 miles. This is a comparatively new mining camp but a snug little chapel and school house have been built, with 3 or 4 good sized stores and 25 or 30 dwelling houses.

Crow's Nest Mine, Aug. 13th, 1897, W. H. Weston, manager, H. Dimock, underground manager. 27 men employed last year. The bulk of the work done in this mine was on the Stake lead. This year the work is on a 7 ft. belt of milling ore. They are sinking to connect with the Hardman tunnel, which is 50 ft. below the present tunnel, and when the connections are made all the ore from the present tunnel will be run down a shoot from the present tunnel to the Hardman tunnel and thence to the mill. The mine is in good shape for working on a large scale. The management are erecting a new mill house with 20 stamps, also a large dwelling house, and an Ingersoll Air Compressor capable of running 3 drills, and are likewise putting in a Dodge Rock Breaker, also two 60 horse power boilers and have ordered a compound engine from I. Matheson & Co., who supply them with engines and boilers, and they intend erecting a one hundred light dynamo to light mill, boarding house, tramway and several portions of the mine. When these improvements are completed this will be one of the leading mines in Guysboro County. The point at which the sinking is being done is 240 ft. inside the new tunnel. On the west side some 20 ft. from tunnel they have driven some 200 ft. on the belt which is from 10 to 15 ft. thick. Since my last visit there have been 2 large belts cut in this tunnel and a 2 ft. lead. The mine is in good condition.

Cochrane Hill Mining Co. Aug. 13th, 1897. Mr. H. E. Taylor manager, and Donaldson, underground manager, 20 men employed. When I was there the mine was idle on account of lack of water supply for mill and steam purposes. The Mitchell belt is now opened up and they are taking 20 ft. of it out. This belt is some 80 ft. thick, composed of slate and quartz mixed through each other. South of the Mitchell belt there is another 6 ft. belt and between these two belts is a 2 ft. lead opened up. All the work in this district is on the north dip. There is a fine mill-house with 20 stamps, a good compressor capable of running 3 or 4 drills, also a good engine and boilers.

Barassois Gold Mining Co., Wine Harbor. August 14th, 1897. Martin Shaugnessey, manager, E. Conroy, underground manager, 20 men employed. There are 3 shafts on the Romkey lead which is 10 inches thick. The east shaft is down 200 ft., and the west 215 ft. The management is making preparations to start work on what is called the Twin leads. This is the third manager in the last three years. In this mine the ladders are in bad condition, but the manager has promised to repair them at once. There are 300 ft. stoped east of the east slope and 250 ft. west of the west slope. The shafts are connected making some 750 ft. of workings in length. The mine is well timbered and ventilated.

Napier Gold Mining Co. H. T. Harding, manager, Andrew Gillis, underground manager, 14 men employed. They are working west on the slate belt, which is 5 ft. thick. The east end is full of water. This mine has been idle for some time. The water is now only out of the west end, but they are pumping and as the belt is giving good returns they intend to take all the water out and work east and west. At the time of my visit they were working only some 50 ft. down.

Goldenville. Aug. 16th, 1897. At Mitchell's Lake there is some prospecting going on. I did not visit this mine as I did not know where they were working.

Bluenose Gold Mining Co. A. G. McNaughton, manager, Gardiner McKenzie, underground manager, 60 men employed. There is a shaft sunk 200 ft. deep on the south belt, which is 8 ft. thick and stoped 500 ft. There is likewise a shaft sunk 200 ft. on the Springfield belt which is 5 ft. thick and stoped 500 ft. The Springfield is sloped east 200 ft. and west 300 ft. from shaft. There is another shaft 75 ft. deep, and distant 1050 ft. west from the west shaft. They are driving a level east on the Springfield belt. Then there is the Coburg lead, 20 inches thick with a shaft down 200 ft. and stoped east 200 ft. and west 100 ft. This is on the north dip and at an angle of 35°. There is a new mill house with 20 stamps running. The mill engine is 45 horse power. There is a new office well furnished and a new trestle, 1200 ft. long. This is for carrying the ore from the various pits to the mill house. There is also an air compressor which runs two drills. The hoisting engine is 40 horse power. The management are now preparing to put in larger air compressors and will run more drills in the near future. There are other belts and leads opened up and ready for work. There are good travelling roads in these mines and they appear perfectly safe.

The New Glasgow Gold Mining Co., J. A. Fraser, manager, Edward Williams, underground manager, 45 men employed. The north lead, on which they are still sinking, is now worked to a depth of 135 ft. and proves better as they descend.

In former years the lead has been worked east and west, and the present work is connected with the old working. Above the 100 ft. slope there is a belt with 35 ft. of milling ore on which nothing is being done at present. They are now sinking on the Canada lead which is 6 inches thick and intend sinking 125 ft. and to tunnel or drive levels and work back over hand stopping. There is also a shaft being sunk on a belt some 14 ft. thick. The Striker lead is idle. This is all the work at this mine at present. The mine is well timbered with good ladder ways.

George [illegible] manager, having 20 men employed, are working on the old [illegible] which was worked some 20 odd years ago. No information could be obtained as to how far it was worked east and west as it was worked through several properties. They have got a lot of gold out of this old mine. They pumped the water down some 90 ft. and in the hanging wall there was a lead with from 3 to 4 ft. of whin between it and the old north lead. They are taking out the old scaffolds and placing new ones across the whole belt. There are two shafts now opened, one of which is 90 ft. deep and the other about 50 ft. On the south belt, which is 5 ft. thick, there is a shaft down 90 ft. This belt has likewise been worked through several properties This is a very rough looking mine, and the ladderways are not in as good a condition as they should be, but the management stated that they had many difficulties to overcome, and were then making necessary repairs on the shaft and ladders.

The Sutherland Development Co., George Brackett, manager, J. H. McDonald, underground manager, 15 men employed. There is a shaft sunk 60 ft. on the Brazen Serpent lead which is 8 inches thick. The management are erecting a new mill. On the John R. belt which is 3½ ft. thick of crushing ore, there are 4 shafts sunk with depths as follows:—No. 1 to the east, 50 ft., Nos. 2 and 3, 90 ft., No. 4, 55 ft. Another shaft is being sunk on the state lead which is 8 inches thick. A cross tunnel, 45 ft. long, connects Nos. 1 and 2 shafts on John R. lead north. On the Murray lead which is 20 inches thick a shaft is now being sunk and will connect with the tunnel. The tunnel will connect several belts and leads, the working of which will be carried on by means of the one shaft close by the new mill which has 10 stamps now in running order. Engine, 25 H.-P. Boiler, 30 H.-P. There is not much work done here yet; they are only making preparations. Things look very well around the mine, and the shafts are well timbered.

Salmon River, Dares Hill District, Aug. 17th, 1897. I find that the old Hattie property is being developed. The property is situated on the west side of Eagle Lake, a beautiful sheet of water, and the mine is now called the Lake Eagle Mine. On elevated ground 21 ft. above the level of the lake is the mill house containing boiler, engine and pumping gear, also a battery of 5 stamps.

The mill is built over the main shaft of the Hattie or Slate lead, a vein of between 2 and 3 inches thick yielding from 1½ to 3 oz. per ton. On this vein are 3 shafts from 30 to 50 ft. in depth. About 70 ft. to the north is an 8 ft. lead of solid quartz opened and well timbered all ready for operation and showing well. Those leads are the
tinuation of the famous Dufferin. Also to the north about 600 ft.
w ft. from the mill is a 2 ft. belt showing well. A large
operty has not been prospected. The surrounding
pplied with hard wood and other timber suitable
ses. This district enjoys many natural facilities for
of my visit I learned from John Perry, who has
n mine, that the water was out of Nos. 3 and 5

shafts and they were running the pumps to the full extent of their power to get the balance of the mine pumped out and expect to have it in working order in a short time. This is another property that has not been thoroughly prospected. Although a large quantity of gold has been obtained here it was all taken out of a very small area. The property is well wooded. The power for carrying on the mining operations here is water power obtained from the Salmon River near by. The power could be increased to a very much greater capacity if required.

Killag Mine, Halifax Co., Aug. 18th, 1897. A. J. Cox, manager, William Farnell, underground manager, 18 men employed. On a lead called the Flat Lead, which is 6 inches thick and laying at an angle of 30°, there is a shaft down 70 ft. They are still sinking and stopping east. There is some 60 ft. stoped on the east side; the west side remains solid. They are pumping out the old shaft and intend working the Stuart lead which is 10 inches thick. There is not much work being done here but the mine is in good condition. Robert Hall and others who have a large block of areas on the north dip of this district are prospecting the property. They have cut 3 leads, which I saw, all bearing minerals. They have some very fine drift quartz obtained on the property and are working with the hope of striking this lead. This is another district which is not prospected beyond a few small trial pits and a few trenches.

Beaver Dam has been idle since last March.

Caribou District, Guffey Jennings Gold Mining Co., Aug. 20th, 1897. L. W. Getchell, manager, R. L. Schurman, underground manager, 12 men employed. They are now sinking a new shaft which is to be 4 ft. 6 in. × 9 ft. inside of timber. This shaft is to go down 500 ft. which will bring it on a level with the present workings. The present working is a shaft 130 ft. deep then a slant down some 800 ft. at an angle of 36°. The new shaft will go down 75 ft. south of this slant and a tunnel will be driven through the belts, thus testing this much of the property to the depth of 500 ft. The shaft will be in three apartments, one for pump; the two for cages will be 4 ft. 6 in. each and the place for pumps 1 ft. The manager intends to work this belt in lifts of probably 100 ft. by sinking and tunnelling through to the pay streak, sections suitable in this way as pillars will be left in to support the old work above. The mine is idle and will probably remain idle until the shaft is down. The water is kept pumped out and the mine looks very well. The belt is from 14 ft. to 15 ft. thick, two-thirds of which is milled. There is a new air compressor now in running order, and air drills are used in the sinking of the new shaft. This property is well equipped with new mill houses and mill, and good boilers and engines. Still it is a very slow and expensive way to get this belt out. The new shaft will concentrate all the work to one point and the ore will be much more cheaply handled than in the old way. There is an air of cleanliness about the engine house and mill here that we do not often see around gold mines. Everything is kept clean and appears to run without a hitch.

Caribou District, Elk Mining Co., Aug. 20th, 1897. F. Prince, manager, Michael J. Murphy, underground manager, 18 men employed, depth of shaft, 100 ft. From shaft bottom there is a slant driven 300 ft. at an angle of 45°, on a belt from 3 to 8 ft. thick, one-third of which is milling ore. This belt is very much disturbed with some bad breaks, which cause bad walls and require great care on the part of the management whose reputation is more or less at stake in case of accidents. They have left a small pillar in as a support and intend leaving more in for the same purpose. Although the mine is well timbered the belt is very irregular and wet. and the scaffolds are not filled with rock as most of the belt goes up the mine and leaving pillars in wide belts is the safest course to follow. I could see the mine was in fair condition and provided pillars be left as support I see no reason for danger, otherwise they may meet trouble.

The Dickson Mine, Aug. 20th, 1897. W. J. Davison, manager, Augustus Lawlor, underground manager, 10 men employed. The water has been permitted to rise in this mine to within 90 ft. of the surface. They are now taking out some lead at the south end of the mine. This is a good safe mine, and has always been well timbered, and the scaffolds well filled with rock. Not much work is being done at the present time, but the mine looks very well.

Moose River District, Aug. 21st, 1897. John Emmett and S. Smith have some areas east of the Touquoy property, on which George Cameron and four other men are prospecting, and have opened up one belt 3 ft. thick and one 14 inches thick, and are making preparations to erect a mill.

The Touquoy Gold Mining Co., John Reynolds, manager, Wm. Reynolds, underground manager, 32 men employed. Working on the Britannia belt which is 7 ft. thick. This is where they are now getting gold so plentifully. It is an old belt opened some time ago and has had very little attention paid to it. Recently the manager drew attention to it again and it has turned out a bonanza. It is down 30 ft. and stoped 20 ft. east and 20 ft. west. They are also working on the little north lead in which there is 20 inches of milling ore. The workings in this lead are down 170 ft. with three shafts on it. They have stoped east 80 ft. and west 420 ft. There is a break in this lead dipping west
d since then they have stoped west under this break. The mine showed
ations of caving in and they decided to leave a pillar in near the
n, and have likewise put in a lot of new timber. They are now
g up the dump, and running it down the mine on the new
hey put in at the bottom, and I think it has stopped the caving
the manager's idea to leave pillars along this break as they

proceed west. He has had some trouble but, I think, is through with it now. The mine looks all right now and I think he has made it quite safe.

Andrew McGregor has 7 men working on the Montreal property on the east side of the road between Emmetts and the Tourquoy property on a large belt. At time of my visit it was down 30 ft. and was 15 ft. thick, getting thicker as they went down on it.

Also J. K. Pearson has 8 men working on Donald Archibald's property one mile west of the Touquoy property and has cut a trench 600 ft. across the belts and has opened up 14 leads and 5 belts; the belts varying in thickness from 3 to 9 ft. and the leads from 3 inches to 1 foot. It is Mr. Pearson's opinion that this is the continuation of the Touquoy property as one or two of the leads are similar to the leads worked on the Touquoy district. The shaft is all well timbered and he is now taking tests out of it. His work is nicely situated on high ground and has the appearance of some day being *the* mine of Moose River.

Little Liscombe Gold Mine, Sept. 10th, 1897. John Power, manager, A. P. McQuarrie, late of Montague, in charge of the mill. 9 men are employed working on the Cow lead which is 4 ft thick with from 2½ to 3 inches of quartz on the foot wall and the same on the hanging wall and whin between. They were also working the slate lead which is about 4½ ft. thick with about 8 inches of quartz on the hanging wall and a few inches of slate, the rest, whin; and are now making arrangements to work part of the big quartz lead which is from 30 to 40 ft. thick. There has been very little work done at this mine since my last visit. The deepest shaft is but 60 ft. The work done is fairly well timbered.

HANTS COUNTY.

South Uniacke Gold Mine, Sept. 21st, 1897. The J. J. Withrow Mining Co., Mr. Leedham, manager, George Brown, underground manager, 57 men employed. Hoisting engine, 45 horse power, mill engine, 40 horse power, 2 boilers, one 60 horse power, and one 50 horse power, 10 stamp mills, 4 shafts down from 100 ft. to 225 ft. deep and stoped, some 900 ft. east and west. These 4 shafts are sunk on the lead known as the Slate lead which is 6 inches thick. There are two steam drills in use and since my last visit a new management has taken charge. I spoke in last year's report of some careless work. Now I am pleased to state that the manager has good large timber set in, and has removed the stone which had been put on bank and had it sent down the mine and filled up all the open ground, thus making the mine safe. The mine now is in very good condition except the travelling way in which there is no mid-wall between it and the hoist. The hoist pump and travelling way are all in one space, but the manager was making preparations to put in a mid-wall between hoist and travelling way for the safety of the men in travelling up and down the shaft.

The Gold Lode Mining Co., A. A. Howard, manager. This mine is idle, but the mill was employed doing some custom work in the way of crushing dump pickings which in several mining camps seem to be turning out a very profitable investment to those who are fortunate enough to own any.

In the Quirk and Thompson mine not much work is being done just now. Five men are employed prospecting on the property and were so engaged at the time of my visit opening up a lead in a slate belt. The mill was running on some tests. The mill engine 10 horse power and there are 5 stamps in the mill. The hoisting engine is 10 horse power also.

The Mount Uniacke Gold Mines are also idle at present, excepting 3 or 4 men doing some work on the old Prince property.

Northup Gold Mining Co., Rawdon, Sept. 22nd, 1897, E. N. Dimock, agent, E. C. Puttner, manager, 28 men employed working on a belt which averages 4 ft. thick. The shaft is 405 ft. deep. There are 5 shafts on this belt all connected underground. This belt is taken out by sinking 60 or 80 ft. then they drive in on the belt say about 500 ft. then raise to the opening above and work back to the shaft, leaving pillars at certain intervals for support to the shaft, thus working the belt out in lifts of from 60 to 80 ft. All the ground between the lifts is well scaffolded and filled at each lift. A part of the ore from one lift is dropped down through chutes to the lift below. All the ore is taken to the lower lift and thence sent to the bank. All the bottom portion of this mine appears in good condition, and travelling ways are in good order, and the mine well ventilated.

A tunnel is being driven on the Central Rawdon property slanting at the north east side of the hill on a course expected to strike the main lead on the hill about 160 ft. south of mill, and is in now about 450 ft., but no leads or belts of any importance have been cut yet. This work is situated on high ground and a tunnel will, as well as testing the property, be one of the cheapest means of mining the ores above its level. There are in use at the mine one 60 horse power Matheson Tubular Boiler, one 40 horse power engine, one Northey steam-pump for supplying water to the mill and boilers, two 5 stamp H. A. Hayward's improved batteries complete, with plates, one 4 ft. corrugated frue fanner, Fraser and Chalmer's, two 6 ft. plain frue fanners, Fraser and Chalmers, all in good running order. The mill is self-feeding. The ore is taken from the shaft to the mill on a trestle about 520 ft. long. I might further add this mine is beautifully situated in a good farming locality which considerably enhances the value of the property at least in appearance, and makes it one of the best looking mines in the Province.

QUEENS COUNTY.

Sept. 24th, 1897. *Whiteburn Mining Camp* is idle at present. George Gammon and Gordon Smith are, however, running the Whiteburn mill on dump pickings. They worked the mine up to 3 weeks ago.

The Crocker mill, Brown mill, and the Rossignol mill are idle. It is however, expected from prevalent rumors that operations will again be resumed very shortly in them. They are all well equipped with necessary working plant.

MALAGA LAKE.

R. R. McLeod has 29 men employed working the Parker-Douglas property on a new lead, called the McLeod lead, 5 inches thick, and in whin. I am informed this is the only lead in the mining camp so situated. The shaft is down some 40 ft. and they have stoped some 50 ft.; this lead has hitherto averaged 5 oz. to the ton. Mr. McLeod has decided to test this across the property. He has 4 men working tribute on the same property, to the south on a 4 inch lead, called the James Roland. They are down 40 ft. and stoped 60 ft. There is a steam hoist erected at the McLeod lead and a bank engine and boiler house is under construction.

Logan Ball and 16 men are working on the twin lead and have 4 shafts from 60 to 100 ft. deep, connected underground. In one of those shafts, B. Murchie was killed by the tub falling down the shaft and killing him. He was attending at the bottom of the shaft filling the tubs and hooking them on ; in some way, it appears, the hook was not properly placed and slipped, letting the tub go down the pit with the sad result as stated. The twin lead is as follows:—3 inches on hanging wall with 3½ ft. of whin between, making a working belt of some 4 ft. thick. There is about 300 ft. of the lead stoped. The mine itself is well timbered, but the travelling-ways are bad and the men have promised to make them safe immediately.

Sydney Aldred and 7 men are at work on a 2½ inch lead north of the twin lead, and have 2 shafts, 25 and 50 ft. deep. The walls are good and fairly well timbered. The Parker Douglas mill, Minneapolis mill and McGregor mill are idle. There is nothing doing except what is superintended by R. R. McLeod. Some 60 men are employed in this camp, but unless something unexpected occurs, a very much larger number will shortly be employed.

North Brookfield Mines. Wm. L. Libby, Manager, Noble Crow, underground manager, 80 men employed. The shaft is 375 ft. deep, of which 135 ft. is perpendicular, at 60 ft. down the shaft, there is an off-set, 45 ft. long on an angle of 45°. The ore is hoisted in a skip, which is carried on wheels running between 2 pieces of deal, 4 × 6 inches. This skip is constructed to empty itself, and can be sent at will down the main shaft or turned off north on the angle lead by shifting a switch attached to a lever on top. From the 135 ft. point, the skip travels at an angle of 35° for 224 ft., which is as far as it can be taken at present. They are now down 700 ft. and still going deeper. This slope is used for taking timber down and makes a grand air-way. The ore that is taken out of the sinking is raised to the bottom of the skip road, and emptied into a larger bin capable of holding 20 tons, and runs from this bin into the skip by raising a lever. The most of the work is on the west side of the pit. There are 3 lifts above where the sinking ore is put: No. 1 is 400 ft., No. 2, 413 ft., and No. 3, 445 ft., and from 50 to 60 ft. apart and connected in at the above mentioned distances and over-stoped. There is a level tunnel off the slope and in 85 ft. on the west side. On east side of shaft a level is driven some 60 ft. The belt varies greatly in thickness. They are milling about 1000 tons per month. The mine is double shifted and works day and night. They have a chlorination plant capable of treating 1000 tons per month. The mill has 20 stamps. Engine, 90 horse power. The hoisting engine is 30 horse power, Truro Foundry Co., makers. There are two 60 horse power boilers. This mine is in fine condition, yet some pillars of ore should be left in as the belt is in some places 12 ft. thick and, although well timbered, it may be driven a considerable distance further, and the pillars would make doubly sure and could be obtained when coming back.

The Philadelphia Mining Co. Charles McClure, manager, S. Carrol, underground manager, 30 men employed. This mine has been idle for most part of the year, but it is now pumped dry and the traveling ways are remodelled and repaired. The shaft which makes a good hoisting and travelling way has been repaired. Considerable expense has been incurred putting this mine in good order, and it now looks well and safe. The lead which is 18 inches thick shows well in gold. There is a 20 stamp mill, 50 horse power engine, 30 horse power hoisting engine, 25 horse power pumping engine, 2 boilers, 45 horse power and 50 rse respectively. There are 3 shafts, one of which is 180 ft. and the rs 200 ft. deep, connected underground for a distance of 300 ft. st and west, I anticipate good results from this mine.

John Thornham, I was informed, has taken charge of an old mine at sant River, but was not properly under way.

I visited a new mine in *Stanbourn* settlement, east some 5 s from New Germany station in the N. S. Central R. R., owned by

G. N. Dimock, James Woodworth and F. C. Mosher, all of Windsor. There is a 5 stamp mill in running order, and three shafts from 18 to 24 ft. deep, on a lead 9 inches thick, bound in whin, and called the little Klondyke. There are quite a number of leads here, and it is an easy place to prospect, as the surface is shallow. There are 16 men employed and they are sanguine of good results. This new mine is in a place that is well wooded, and a large river called the North River is distant only half a mile, power from which could be made available to carry on extensive mining operations.

LUNENBURG COUNTY.

Block House Mine. I found A. A. Hiseler with 6 men on the Prest lead or Fisher lead which runs nearly north and south. At the place opened by Mr. Hiseler it is about quarter of a mile further north than the place at which W. H. Prest did considerable work. Mr. Hiseler has sunk a shaft 46 ft. and the lead is 3 ft. of quartz, he has up a bank house and small office.

Godfrey Smith has 4 men prospecting between Prest's old work and Hiseler's new shaft on the same lead, this is all that is doing at Block House at present.

The Gold River Gold Mine. I. N. Baker, manager, and John Wheeler, underground manager, 7 men employed working on the west end of the North Star lead. This Belt has 3 leads, namely, on the foot wall, 8 inches, on the hanging wall 3½ inches, and in the middle of the Belt, 4 inches. This Belt is about 5 ft. thick and some 16 inches of lead in it. There are 4 shafts, all connected underground, varying from 50 to 80 ft. deep. Some work is being done on another lead further south. There is a 2 stamp mill, and the leads show very rich in gold.

G. J. Hiseler has 5 men working on his property north of the Abraham Lincoln Gold Mining Co., and has opened a belt 8 ft. thick with 3 ft. of quartz in it beside stringers in the slate. He has also opened two others, one 18 inches thick and the other 7 inches, and all give very good indications.

The Victor Mine Mill, the old Jumbow Mine Mill and the Abraham Lincoln Mine Mill are idle. However, T. N. Baker and G. J. Hiseler are opening up very promising properties, and from appearances I would conclude that this mining camp will soon come up again.

MONTAGUE.

Hayward Mine. The main shaft on the Lawson or Belt lead is now about 340 ft. deep. The last 110 feet of this has been sunk since Sept., 1896. Besides this work, a drift, 200 ft. long, has been driven easterly at the 200 ft. level; and at the bottom level drifts 50 ft. long have been driven both easterly and westerly. The drift at the 200 ft. level reaches the break the lead being found again 40 ft. to the north. A large fissure lead runs north and south at this point.

On the Skerry lead in the southern part of the block five prospecting shafts have been sunk by tributors, consuming about 200 days' work. To the east of the main shaft on the Nugget lead there is a shaft (already 50 ft. deep) being sunk to an additional depth of 80 ft. A shaft house and engine house, now under construction, are nearing completion.

At this mine they have four rock drills (Rand), three of which are in operation.

Oland Property, (Symonds-Kaye). On the Skerry lead to the east of the old mill two shafts have been sunk, the first one 60 ft. deep and the east one 50 ft. deep. These are joined by a drift about 25 ft. long.

Salisbury Property. Tributors have sunk a shaft on the middle block, and are still working there, making it pay fairly well.

On the west block of this property prospecting has been done during the last few months to the extent of about 60 days' work. According to Mr. Logan one small lead has been cut, showing gold, but not containing enough to warrant further work on it.

IRON MINING

PICTOU COUNTY.

Pictou Charcoal Iron Mining Co., Bridgeville, W. B. Moore, manager, Thos. Williams, underground manager, 26 men employed underground, 5 overground. I travelled all the new works. There is a slope down 98 ft. at an angle of 45°, and a lead turned off south now in some 90 ft. in good ore 11 ft. thick. There is a place being driven up to the old workings and they made connections at the time of my visit. This makes a good return for air as it is over 100 ft. higher than the mouth of the slope. In this place the ore is 8 ft. thick, they are also driving north and are in 165 ft. in ore 6¾ ft. thick. This is all new work, well timbered and ventilated. It was in the south level of this mine, 45 ft. from the bottom, that Evan Sutherland received injuries from a fall of clay from the roof that caused his death. They were averaging an output of 60 tons per day when I was there, but this could be increased to 100 tons per day if required. This is all the work this Company is doing at present.

The Brook and Road tunnels are both idle.

All of which is respectfully submitted.

I have the honor to remain,

Yours very respectfully,

WM. MADDIN, Jr.
Dep. Inspector of Mines.

MISCELLANEOUS.

Quicksilver.—An interesting occurrence of this metal was reported from a small piece of ground forming the division between the First and Second Dartmouth Lakes. This ground is partly destroyed glacial moraine, the surface of which for a few feet in depth has been weathered into a sandy loam with boulders of slate and quartzite. All through this surface the quicksilver occurs in globules. No attempt has yet been made to follow the metal to its source, beyond a shallow pit revealing the comparatively unaltered moraine a few feet below the surface.

Lead Ore.—The Cheticamp district in Northern Inverness in the fall of 1896 was boomed as an alluvial gold producer along the course of the Little or Cheticamp River. Gold is undoubtedly present in all the streams of the district, but as yet no systematic testing or work has been done. The work of the gold prospectors has, however, disclosed a deposit which may prove very valuable. In prospecting the L'Abime Brook a deposit of galena ore of large size was found.

This has been opened by the Cheticamp Gold Mining Company. The property so far as developed promises to be very valuable. The face value of the openings are stated to be 20 per cent. galena and 3 per cent. copper. The ore is said to carry on an average one ounce of silver for every unit of lead, and gold in places up to 14 dwts. per ton. There is no doubt that the district extending northerly from Cheticamp towards Mackenzie River is well worth the attention of prospectors in the vicinity of the dykes which traverse it.

Copper.—During the past season a good deal of interest was taken in the search for deposit of copper ore in Cumberland and Colchester Counties. These ores are very widely spread, and in several places the reports show evidence of good value. The ores contain frequently small amounts of gold and silver, and in one instance quicksilver. It is expected that these explorations will be resumed next summer. I give the following note of a visit paid by Mr. Maddin, Dep. Inspector, to the work done in the vicinity of Wentworth Station:

On September, 14th, 1897, I visited the copper mine on Wallace River about 3 miles from Wentworth Station, owned by E. R. Betts and H. D. Pierce. This property has good indications of copper, but no new work has been done on it for some time. Then 6 miles further to the north east on what is called the Chisholm property, and on the same river, a shaft was sunk which at the time of my visit was nearly full of water. The water became too heavy to discharge without the aid of pumps, and a tunnel has been driven from the banks of the Wallace River some 60 ft. in toward the shaft. E. R. Betts, who take much interest in this and other properties, says the shaft is well timbered. The exposures on the bank are red sandstone. The shaft is in clay, and only struck the rock when the water stopped them. I observed some very good copper ore, which Mr. Betts informed me was taken from the shaft. Mr. Albert J. Hoskins and Mr. S. K. Page, with others, are interested in these areas, but were then away obtaining pumps and machinery for the purpose of developing this property. At a point further north east and one mile east from Wallace Station, in a railway cut running through red sandstone, copper ore is exposed, and on nearly the same course on the north shore, I am informed, very good copper ore has recently been found. I regret very much the above mentioned works were idle at the time I was there but I anticipate hearing that work is resumed at an early date.

IRON ORE AND OTHER MINERALS.

During the past year the Londonderry Iron Company mined very little ore. The Torbrook mine remained idle.

The Nova Scotia Steel Company worked at Bridgeville and drew some ore from the Charcoal Company. They have imported largely from Bell Island, Newfoundland, with a corresponding diminution in the amount mined in Nova Scotia. It is stated that the Bridgeville Charcoal Iron Company are arranging for the manufacture of ferromanganese. The manganese ore to be supplied from New Brunswick. Some prospecting was done on the Whycogomah iron deposits, the results showing that the deposits contain very large amounts of iron ore, of good quality close to shipping. Owing to the increasing cost of ores on the European continent suitable for the Bessemer process there is an undoubted future in iron ores on tide water in the Lower Provinces which are of good grade.

Manganese. The exports of this mineral during the year were small. It has been stated that a new deposit of good grade and unusual extent was recently opened and samples shipped.

Barytes. A mine of this mineral has been operated to some extent by the Messrs. Henderson & Potts on the east side of Lake Ainslie. The vein is from five to nine feet in thickness and has been traced several hundred feet.

The above is respectfully submitted by

Your obedient servant,

E. GILPIN, JR.
Inspector of Mines.

TABLES.

LIST OF MINERAL LEASES (OTHER THAN GOLD.)

IRON.

No. of Lease.	Name of Owner.	County.	Agent or Manager.	Address.	No. of Sq. Miles.
36, 93	Moseley, E T	Cape Breton			2
145	McLean, Jno	"			1
91	Brookman, P.	"			1
92	Matheson, D	"			1
102	Smith, W	"			1
103	McKenzie, H. R	"			1
104	McKenzie, J. W	"			1
43, 44, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59	Bartlett, J. H	Pictou			15
60, 68, 70, 71	Nova Scotia Steel Co	"			4
61, 67	Cameron, J. A	"			2
1	McIntosh, J. C	"			1
2	McDonald, L	Antigonish			1
92	McAloney, J	Cumberland			1
5	McDougald, J	Antigonish			1
10	Fraser, W. J	Inverness			1
1, 2	Nova Scotia Steel Co	Guysboro			2
22, 82	McMillan, J. R	Inverness			2
					37

	COPPER.				
145	McLean, J	Cape Breton			1
142	LeCras, H	"			1
126	Matheson, A	"			1
116	Greener, J	"			1
95, 106	Eastern, Dev Co	"			2
105, 181	Burchell, J. E	"			2
94	McKenzie, D	"			1
2	Grant, J. A	Antigonish			1
3	Francklyn, G. E	"			1
4	McInnis, Hugh	"			1
7	Nichols, T	Victoria			1
6	Hardman, J. E	"			1
5	Cove, J. W	Colchester			1
135	McKenzie, R	Cape Breton			½
					15½
	LEAD.				
143	Cape Breton Silver Mining Co	Cape Breton			1
2, 3	Fraser, C. F	Colchester			2
					3
	COAL.				
83, 84, 85	Barton, A. McG	Pictou			3
$_{2}{}^{1}{}_{3}$, $_{4}{}^{2}{}_{2}$, 3, 4, 62, 63, 64, 69	Acadia Coal Co	"	H. S. Poole	Stellarton	18
5/12, 6/13, 9/14	Intercolonial Coal Co	"	C. Fergie	"	3
8/6	Nova Scotia Steel Co	"			1
			Carried	forward	25

LIST OF MINERAL LEASES (OTHER THAN GOLD.)—*Continued.*

COAL.

No. of Lease.	Name of Owner.	County.	Agent or Manager.	Address.	No. of Sq. Miles.
				Br't forward.	25
10/24	Richey, M. H	Pictou			1
11/11, 45, 10	Gray, B. G	"			4
66/46	Fergie, C.	"			1
46, 83	Nova Scotia Steel Co	"			2
					33
56, 22/51, 74, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 14	Canada Coals & R'y. Co	Cumberland			15
55, $\frac{16}{6}$, $\frac{17}{7}$, $\frac{18}{8}$. $\frac{20}{52}$, $\frac{21}{55}$, 61, 62, 70, 71, 72, 73, 75, 76, 77, 78, 79, 81, 82, 83, 84, 85, 87, 88, 90, 177, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124	Cumberland Rail'y & Coal Co.	"	J. R. Cowans.	Springhill	48
8/5	Lawson Mining Co	"			1
6/12	Londonderry Iron Co	"			1
15	Prospect Mining Co	"			
9/22, $\frac{10}{23}$, $\frac{11}{28}$, $\frac{12}{29}$, $\frac{13}{30}$	Styles Mining Co	"			5
23/53	Binney, J. W	"			1
24/47, 25/49	Boston Coal Mining Co	"			2
57	Salt Springs Coal Co	"			1

26/16	Minudie M. & T. Co.	Cumberland			1
58, 59, 60, 61	Tupper, C. H.	"			4
63, 93, 105	Leckie, R. G	"			3
65	Annand, C.	"			1
66, 67, 68, 69	Cowans, J. R	"			4
80	Gue, T. R	"			1
86	Rutherford, J	"			1
91	Fraser, H. R	"			1
89	Hickman, J. S	"			1
94, 107	Weatherbe, U. T.	"			2
94	Hayward, A. A	"			1
106	Vroom, W. E.	"			1
107	Fitzsimmons, R.	"			1
					96
13/79, 1/27, 2, 3, 28, 29, 30	General Mining Association	Cape Breton	R. H. Brown	Sydney Mines	23
37/78, 58/67	Weatherbe, R. L	"			2
42/52, 49/53	McLeod, Hugh	"			2
207, 45/5, 46/28, 47/29, 50/40, 51/41, 52/42, 60/54, 61/55, 62/56, 63/57, 64/58, 65/59, 66/60, 67/61, 68/62, 69/63, 108, 109, 110, 125, 137, 162, 188	Dominion Coal Co.	"	H. Donkin	Glace Bay	94
117	Hamilton, A. G.	"			1
142	LeCras, Henry	"			1
111	Greener, Jno	"			1
214	Cayley, H. St. Q	"			1
			Carried	*forward.*	125

LIST OF MINERAL LEASES (OTHER THAN GOLD.)—*Continued.*

COAL.—(*Continued.*)

No. of Lease.	Name of Owner.	County.	Agent or Manager.	Address.	No. of Sq. Miles.
				Br't forward.	125
179, 180, 164, 168, 190, 208	Roberts, F	Cape Breton			6
112, 113, 114, 115, 118, 42	Cowans, R	"			6
130	Fairbanks, E. C	"			1
128, 129, 134, 135, 136, 139, 144	Moseley, E T	"			7
138, 149, 184, 203	White, A. J	"			4
141, 177, 140	Cumberland Ry. & Coal Co.	"			3
146	Tremaine, B. E	"			1
159, 160	Morrison, A G	"			2
166	Dunn, J	"			1
161	Routledge, E	"			1
169, 170, 183	McKay, Jas	"			3
178	Routledge, W	"			1
165	Stephens, L. H	"			1
163, 185	Hamilton, C. F	"			2
199, 193, 194, 176	Copeland, J. D	"			4
171, 174, 212	Goreham, J. W	"			3
181, 211	Burchell, J. E	"			2
0	McKinnon, D. L	"			1

209, 206, 186, 187, 202, 205	Kennelly, D. J	Cape Breton			6
210	Harold, T. C.	"			1
196	Routledge, T	"			1
201	Hickey, C	"			1
204	Morrison, M	"			1
0	McCuish, A	"			1
192	McKenzie, J. A	"			1
198	McKenzie, Jas. A	"			1
175	McDonald, J. W	"			1
182, 200	Cossitt, G. G	"			2
167	Murray, J	"			1
189	Morrison, J	"			1
191	Tremaine, L. E	"			1
195	McDonald, A. J	"			1
197	McVicar, J	"			1
					195
1/2	Burchell Bros	Victoria	J. T. Burchell	N. Campbl't'n	3
1/13	McGregor, J. D	Inverness			3
2/6	Ross, H. E	"			1
6/4, 7/10	Shannon, S. L	"			1
8, 9, 10	Fraser, J. W	"			3
11	Dawson, G	"			1
19, 20	Smythe, J. J	"			2
12, 13, 14, 15	Broad Cove Coal Co	"	W. P. Hussey	Broad Cove	4
26	McKenzie, J. W	"	"	"	1
16	Drummond, R	"	"	"	1
			Carried	*forward.*	20

LIST OF MINERAL LEASES (OTHER THAN GOLD.)—*Continued.*

COAL.—(*Continued.*)

No. of Lease.	Name of Owner.	County.	Agent or Manager.	Address.	No. of Sq. Miles.
				Br't. forward.	20
0	McNab, W	Inverness	W. P. Hussey.	Broad Cove	1
24	Hussey, W. P	"	"	"	1
16	Jones, A. C	"	"	"	1
23, 25, 28	McColl, J	"	"	"	3
27, 3/11	Boston and N S. Coal Co.	"	"	"	2
31	Tupper, M	"	"	"	1
29, 30	Tremaine, E. D	"	"	"	2
35	Ross, W	"	"	"	1
32, 33, 34	Wallace, W. V	"	"	"	3
					35
1, 7, 8	Terminal, City Co.	Richmond	"	"	3
2	Columbia Coal Co	"	"	"	1
3	Reynolds, W. K	"	"	"	1
5	Chisholm, W.	"	"	"	1
4, 6, 9	Lennoxville T. & C. Co	"	"	"	3
0	Catherine, Jos	"	"	"	1
					10
1	McMillen, T. C	Colchester	"	"	1

TABLE A.—COAL TRADE BY COUNTIES, FOR THE YEAR ENDING SEPTEMBER 30TH, 1897.

	CUMBERLAND.		PICTOU.		CAPE BRETON.		OTHER COUNTIES.		TOTAL.	
	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.
1st Quarter........	118,462	106,089	94,656	82,973	341,086	306,101	4,324	3,837	558,528	499,000
2nd "	77,336	68,568	93,121	76,783	144,880	84,433	1,272	452	316,609	230,236
3rd "	108,849	90,524	83,149	72,768	401,290	332,586	4,910	4,090	598,198	499.968
4th "	88,326	74,039	115,942	107,710	637,663	598,533	5,650	3,935	847,581	784,217
Total.........	392,973	339,220	386.868	340,234	1,524,919	1,321,653	16,156	12,314	2,320,916	2,013,421

TABLE B.—COAL TRADE BY COUNTIES, FOR THE YEAR ENDING SEPTEMBER 30TH, 1897.

	CUMBERLAND.		PICTOU.		CAPE BRETON.		OTHER COUNTIES.		GRAND TOTAL.
	Round.	Slack.	Round.	Slack.	Round.	Slack.	Round.	Slack.	
NOVA SCOTIA:									
Land Sales	35,446	55,728	120,837	84,394	14,900	12,662	641	......	324,608
Sea Born	......	......	34,073	9,781	202,633	71,024	6,561	......	316,700
Total	35,446	55,728	154,910	94,175	217,533	83,686	7,202	......	641,308
New Brunswick	142,099	41,649	5,503	1,434	84,428	9,394	164	......	242,043
Newfoundland	......	......	......	103	72,851	2,792	244	......	75,990
P. E. Island	......	......	17,178	20,793	8,229	15,315	517	......	62,032
Quebec	42,515	9,592	40,638	5,500	701,724	71,878	4,027	......	875,874
West Indies	......	5,227	......	......	4,001	128	......	......	9,356
United States	......	6,964	......	......	74,709	24,446	660	......	106,279
Other Countries	......	......	......	......	539	......	......	......	539
Total	220,060	119,160	218,229	122,005	1,114,014	207,639	12,314	......	2,013,421

COAL.—SALES.

NAMES.	1st. Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	Year 1897.	Year 1896
NOVA SCOTIA :						
Land Sales.	90,444	91,003	69,221	73,940	324,608	359,396
Sea Borne..	115,897	26,949	70,102	103,752	316,700	307,007
Total N. S..	206,341	117,952	139,323	177,692	641,308	666,403
New Brunswick.	65,808	54,442	59,296	62,497	242,043	252,293
Newfoundland. .	35,025	3,847	10,775	26,343	75,990	94,236
P. E. Island....	19,304	......	14 927	27,801	62,032	63,000
Quebec	130,722	28,829	242,483	473,840	875,874	795,060
West Indies....	9,264	......	92	......	9,356	1,222
United States ..	31,997	25,166	33,072	16,044	106,279	174,919
Other Countries.	539	......	.....	......	539	....
Total.....	499,000	230,236	499,968	784,217	'013,421	2,047,133

COAL.—GENERAL STATEMENT.

1897.	Produce.	Sales.	Colliery Consumption.
1st Quarter....................	558,528	499,000	55,801
2nd "	316,609	230,236	48,677
3rd "	598,198	499,968	44,919
4th "	847,581	784,217	38,421
Total..........	2,320,916	2,013,421	187,818

showing the quantities of Nova Scotia Coal delivered by water to the St. Lawrence ports during the son of navigation just closed, together with the quantities of coal received from other sources.
(Can. Min. Review.)

	MONTREAL.		SOREL.		THREE RIVERS.		QUEBEC.		TOTALS.		EACH FIELD.	
	1896.	1897.	1896.	1897.	1896.	1897.	1896.	1897.	1896.	1897.	1896.	1897.
CAPE BRETON :												
General Mining Association........	74,610	78,435	8,808	8,793	2,144	2,416	33,473	30,740	119,035	120,384		
Dominion Coal Co................	485,804	576,339	9,053	7,535	5,571	6,542	47,345	80,092	547,773	670,508		
Cape Breton Colliery.............	4,750	3,378	....	....	....	....	1,330	....	6,080	3,378		
Total..................	565,164	658,152	17,861	16,328	7,715	8,958	82,148	110,832	672,888	794,270	672,888	794,270
PICTOU COUNTY :												
Intercolonial Coal Co....	33,569	40,587	... .	....	....	....	....	3,762	33,569	44,349	33,569	44,349
FOREIGN :												
Scotch, English, Welsh & American.	67,434	69,917	....	4,550	....	....	18,933	8,377	86,367	82,844	86,367	82,844
	666,167	768,656	17,861	20,878	7,715	8,958	101,081	122,971	792,824	921,463	792,824	921,463

The returns for previous ten years were :—1895, 724,948 ; 1894, 796,282 ; 1893, 737,891 ; 1892, 626,087 ; 1891, 602,323 ; 1890, 543,656 ; 1889, 467,525 ; 1888, 517,539 : 1887, 482,103 ; 1886, 377,500 ; 1885, 360.000.

COAL PRODUCE OF NOVA SCOTIA FOR YEAR ENDED SEPTEMBER 30, 1897.

COLLIERY.	Produce.	SALES.		Total Sales.	COLLIERY CONSUMPTION.	
		Round.	Slack.		Engines.	Workmen.
Joggins	73.357	59,488	13,049	72,537	4,034	1,440
Jubilee	40	40	....	40	....	....
Scotia	1,280	799	255	1,054	....	112
Springhill	318,296	159,733	105,856	265,589	26,117	5,990
Acadia	213,050	119.689	60,193	179,882	24,771	5,016
Intercolonial	173,818	105,361	54,991	160,352	9,097	3,579
Dominion Coal	1,252,484	917,625	169.120	1,086.745	53,526	20,196
Sydney	267,626	192,310	37,539	229,849	18,377	12,709
North Sydney	4,809	4,079	980	5,059	8	93
Broad Cove	799	402	....	402	7	11
Mabou	289	289	....	289	....	....
New Campbellton	15,068	11,623	....	11,623	2,345	390
	2,320,916	1,571,438	441,983	2,013,421	138,282	49,536

Nova Scotia Coal Sales, 1785 to 1897 (Inclusive.)

Year.	Sales.	Total.	Year.	Sales.	Tot
1785	1,668		1841	148,298	Forw d 1,
1786	2,000		1842	129,708	
1787	10,681		1843	105,161	
1788			1844	108,482	
1789			1845	150,674	
1790		14,439	1846	147,506	
1791	2,670		1847	201,650	
1792	2,143		1848	187,643	
1793	1,926		1849	174,592	
1794	4,405		1850	180,084	1,
1795	5,320		1851	153,499	
1796	5,249		1852	188,076	
1797	6,039		1853	217,416	
1798	5,948		1854	234.812	
1799	8,947		1855	238,215	
1800	8,401	51,048	1656	253,492	
1801	5,775		1857	294,198	
1802	7,769		1858	226,725	
1803	6,601		1859	270.293	
1804	5,976		1860	322,593	2,
1805	10,130		1861	326.429	
1806	4,938		1862	395,637	
1807	5,119		1863	429.351	
1808	6,616		1864	576,935	
1809	8,919		1865	635,586	
1810	8.609	70,442	1866	558.520	
1811	8,516		1867	471,185	
1812	9,570		1868	453,624	
1813	9.744		1869	511,795	
1814	9,866		1870	568.277	4,
1815	9,336		1871	596,418	
1816	8,619		1872	785,914	
1817	9,284		1873	811.106	
1818	7,920		1874	749,127	
1819	8,692		1875	706,795	
1820	9.980	91,527	1876	634,207	
1821	11,388		1877	697,865	
1822	7,512		1878	693,511	
1823	27,000		1879	688,628	
1824			1880	954,659	7,
1825			8881	1,035,014	
1826	12,600		1882	1,250,179	
1827	12,149		1883	1,297,523	
1828	20,967		1884	1,261,650	
1829	21,935		1885	1,254,510	
1830	27,269	140,820	1886	1,373,666	
1831	37,170		1887	1,519,684	
1832	50,369		1888	1,576,692	
1833	64,743		1889	1,755,107	
1834	50,813		1890	1,786,111	13,
1835	56,434		1891	1,849,945	1,
1836	107,593		1892	1,752,934	1,
1837	118,942		*1893	1,485,924	1,
1838	106,730		†1894	2.019,742	2
1839	145,962		1895	1,831,357	1
1840	101,198	839,954	1896	2,047,133	2.
			1897	2,013,421	2,
				Total....................	$44,

SUMMARY.

..............................14,349	1841 to 1850 ....
......................51,048	1851 to 1860 ....
......................70,452	1861 to 1870 ....
.... 91,527	1871 to 1880 ....
...............140,820	1881 to 1890 1
...........839,954	

year begins Oct. 1, and ends Sep. 30. (Cap. 4, Acts 18

GOLD.

GENERAL ANNUAL STATEMENT.

YEAR.	Total Ounces of Gold Extracted.			Stuff Crushed.	Total Days' Labor.
	Oz.	Dwts.	Grs.		
1862	7275	0	0	6473	156,000
1863	14001	14	17	17002	273,264
1864	20022	18	13	21434	252,720
1865	25454	4	8	24423	212,966
1866	25204	13	2	32162	211,796
1867	27314	11	11	31386	218,894
1868	20541	6	10	32262	241,462
1869	17868	0	19	35147	210,938
1870	19866	5	5	30829	173,680
1871	19227	7	4	30791	162,922
1872	13094	17	6	17093	112,476
1873	11852	7	19	17708	93,570
1874	9140	13	9	13844	77,246
1875	11208	14	19	14810	91,698
1876	12038	13	18	15490	111,304
1877	16882	6	1	17369	123,565
1878	12577	1	22	17990	110,422
1879	13801	8	10	15936	92,002
1880	13234	0	4	14037	103,826
1881	10756	13	2	15556	126,308
1882	14107	3	20	12081	106,884
1883	15446	9	23	25954	97,733
1884	16059	18	17	25147	118 087
1885	22202	12	20	28890	157,421
1886	23362	5	13	29010	128,880
1887	21211	17	18	22280	173,448
1888	22407	3	10	36178	163,772
1889	26155	6	13	39160	211,548
1890	24358	9	9	42749	160,164
1891	23391	..	..	35212	149,381
1892	21080	3	18	33633	120,761
1893*	14030	5	7	28040	97,471
1894	14980	7	13	39333	139,140
1895	22112	17	21	58082	159,564
1896	25596	14	6	65873	180,519
1897	26579	19	21	76559	207,255
Total .	654446	8	14	1029923	5,529,057

*Nine months only.

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.

MONTH.	Cow Bay.							Sherbrooke.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Gr.					Oz.	Dwts.	Gr.
October	1			6	..	1	6	3	3122	124	691	291	..	..
November	1			30	27	10	..	4	3240	129	971	322	..	..
December	1			105	56	3	..	5	3187	127	1020	360	6	..
January	1			65	66	6	1	4	3092	123	820	331	..	..
February	1			47.10	54	12	12	4	2846	113	1126.10	381	..	..
March	1			57.10	40	9	..	4	3350	134	1261	419	..	..
April	1			97	94	11	14	5	3791	151	499	138	3	..
May	1			75	55	12	..	5	4076	163	1924	453	3	19
June	1			67	65	11	10	5	3872	154	904	332	8	..
July	1				..	..	..	6	8486	339	1380	506	5	..
August	1			148	93	3	..	6	7891	315	1395	415	7	..
September	1			20	6	..	..	6	9157	366	668	232	10	..
Total				717.20	560	19	19		56110		12659.10	4181	18	19

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—*(Continued.)*

MONTH.	CARIBOU.							UNIACKE AND SOUTH UNIACKE.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Grs.					Oz.	Dwts.	Grs.
October	5	2517	100	1075	261	10	12	4	1031	41	90	133	10	11
November	6	2782	111	923	215	18	12	4	1554	62	264	280	16	18
December	6	2469	98	1047	366	..	..	4	1584	63	209	239	16	11
January	5	1699	67	578	107	17	12	4	1737	69	139	187	12	18
February	4	1401	56	710	203	11	..	4	1707	68	305	241	3	18
March	4	2068	82	628	393	5	..	4	2121	84	237	140	16	..
April	5	1600	64	864	312	18	..	4	984	39	477	379	3	..
May	5	1820	72	731	369	2	..	4	953	38	108	143	1	..
June	5	2037	81	1114	269	7	13	4	837	33	146	161	12	..
July	5	2546	101	971	245	3	..	2	468	18	104	120	11	..
August	5	2343	93	673	37	..	18	2	427	17	140	112	4	..
September	5	2127	84	......	....	..	..	2	392	15	130	134	2	..
Total	..	25409	....	9324	2781	13	19	..	4985	..	2349	2274	9	4

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—*(Continued.)*

MONTH.	Stormont.							Waverly.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Grs.					Oz.	Dwts.	Grs.
October	6	4307	172	2499	550	18	..	1	550	22	90	39	9	..
November	6	4336	173	2496	600	9	..	1	485	19	91	26	10	6
December	7	4299	171	2875	707	2	22	1	500	20	129	56	16	12
January	3	3670	146	2378	235	1	6	1	319	12	35	16	11	..
February	3	3380	135	2399	371	..	..	1	350	14	48	32	7	..
March	4	3521	140	926	537	11	7	1	318	12	75	49	12	..
April	2	3321	132	2477	528	13	..	1	221	8	68	38	15	6
May	2	3075	123	2396	528	5	..	1	180	7	44	41	13	..
June	2	3262	130	2448	541	10	14	1	247	9	99	62	15	..
July	2	3636	145	2728	628	1	9	3	719	28	34	29	1	..
August	2	3241	129	2569	540	19	..	2	640	25	93	67	18	..
September	2	3338	133	2509	440	4	..	3	702	28	......	..	..	..
Total	....	43486	....	28700	6209	18	10	....	5231	....	806	461	8	..

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—*(Continued.)*

MONTH.	Central Rawdon.							Killag.						
	No. of Mines.	Day's Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Grs.					Oz.	Dwts.	Grs.
October	1	1226	49	39	15	7	..	1	81	3	3	13	2	..
November	1	1134	45	75	12	..	..	1	75	3	2	22	11	..
December	1	1123	44	187	49	..	..	1	72	2	......	..	..	..
January	1	1128	45	130	25	10	..	....	......	....	......	..	..	..
February	1	1167	46	......	..	..	..	....	......	....	10	35	4	..
March	1	1173	46	......	..	..	..	....	......	....	......	..	..	..
April	1	1094	43	......	..	..	..	....	......	....	9	64	10	..
May	1	1172	46	......	..	..	..	....	......	....	11	48	14	..
June	1	1189	47	190	25	4	..	....	......	....	17	51	10	..
July	1	1127	45	120	22	18	..	....	......	....	16	67	10	..
August	1	1102	44	10	3	3	..	....	......	....	19	38	..	..
September	1	1096	43	212	46	10	..	....	......	....	25	53	6	..
Total	..	13731	..	963	199	12	..	..	228	....	112	393	19	..

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	Wine Harbour.							Tangier.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Grs.					Oz.	Dwts.	Grs.
October	....	....	....	15	11	4	..	....	186	7	......	..	..	..
November	....	....	....	61	21	6	..	....	242	9	......	..	..	..
December	....	....	....	50	23	..	..	....	271	10	12	5	4	..
January	1	235	9	50	31	19	12	1	350	14	......	..	..	..
February	1	150	6	80	50	9	14	1	340	13	......	..	..	..
March	1	175	7	45	36	2	..	1	218	8	105	48	18	..
April	....	....	....	......	..	..	..	....	152	6	25	12	..	..
May	....	....	....	......	..	..	..	....	334	13	72	59	12	..
June	....	....	....	......	..	..	..	....	375	15	42	48	..	..
July	1	247	9	110	56	2	..	1	537	21	36	32	..	..
August	1	372	14	200	78	..	..	1	627	25	80	44	..	..
September	1	104	4	......	..	..	..	1	428	17	......	..	..	..
Total	..	1293	..	611	318	3	2	..	4060	..	372	299	14	..

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—*(Continued.)*

MONTH.	Brookfield.							Fifteen Mile Stream.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Grs.					Oz.	Dwts.	Grs.
October	1	1462	58	510	292	..	..	2	1837	73	......	114	..	..
November	1	1312	52	376	219	10	..	2	1499	59	296	49	15	..
December	1	1402	56	418	250	..	..	2	1674	66	563	145	9	..
January	1	1511	60	250	161	..	..	1	1276	51	751	179	2	..
February	1	1648	65	450	236	..	..	1	1227	49	900	240	10	..
March	1	1758	70	700	444	..	..	1	1423	56	926	265	..	..
April	1	1826	73	680	362	..	..	1	1267	50	945	270	18	..
May	1	2017	80	1000	308	..	..	1	1353	54	890	254	10	..
June	1	1679	67	798	244	..	..	1	1531	61	900	233	..	..
July	1	1300	52	966	315	..	..	1	1582	63	910	269	4	..
August	1	1343	53	980	292	..	..	1	1442	57	1047	400	10	..
September	1	1406	56	972	349	..	..	1	1422	56	1000	445	..	..
Total	..	18664	..	8076	3366	10	..	..	17533	..	9158	2856	18	..

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—*(Continued.)*

MONTH.	MILLIPSIGATE.							OLDHAM.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Grs.					Oz.	Dwts.	Grs.
October	1	251	10	......	..	..	..	....	......	....	50	5	18	12
November	1	326	13	......	..	..	..	....	......	....	9	2	..	..
December	2	380	15	......	..	..	..	....	......	....	10	1	9	..
January	2	373	14	......	..	..	..	....	......	....	24	31	18	..
February	2	318	12	......	..	..	..	....	......	....	8	38	..	..
March	2	230	9	......	..	..	..	....	......	....	14	11	14	..
April	2	118	4	80	43	18	..	....	......	....	......	..	..	..
May	2	190	7	......	..	..	..	....	......	....	41	7	14	12
June	2	198	7	......	..	..	..	....	......	....	35	14	5	18
July	2	145	5	......	..	..	..	....	......	....	......	..	..	..
August	2	373	14	......	..	..	..	....	......	....	117	169	5	12
September	2	549	21	87	38	9	..	....	......	....	......	..	..	..
Total	..	3451	..	167	82	7	..	....	......	....	308	282	5	6

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—*(Continued.)*

MONTH.	GOLD RIVER.							MONTAGUE.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Grs.					Oz.	Dwts.	Grs.
October	2	......	....	66	93	10	19	1	282	11	85	12	1	..
November	1	......	....	88	156	..	..	1	232	9	68	76	9	..
December	1	......	....	......	..	..	..	1	142	5	92	11	5	16
January	....	266	10	39	40	14	..	2	669	26	63	105	12	..
February	....	255	10	......	..	..	..	2	796	31	27	10	17	15
March	....	308	12	46	18	11	..	2	692	27	70	66	16	..
April	1	......	....	6	33	19	7	1	671	26	120	74	14	9
May	1	......	....	3	..	13	19	1	625	25	84	63	15	15
June	1	......	....	5	82	9	7	1	602	24	69	138	13	18
July	2	......	....	6	26	5	..	3	837	33	73	262	15	10
August	2	......	....	12	45	15	5	3	1003	40	115	192	14	15
September	4	......	....	16	45	..	20	3	1145	45	90	161	5	5
Total	..	829	....	287	542	19	5	..	7696	..	956	1177	1	7

UNPROCLAIMED AND OTHER DISTRICTS.

MONTH.	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Gr.
October	4	359	14	70	8	5	..
November	4	328	13	45	131	11	4
December	2	674	26	250	112	15	..
January	2	399	15	65	64	12	..
February	2	287	11	35	34	14	20
March	2	458	14	19	26	15	..
April	1	96	3	75	61	11	22
May	2	205	8	......	..	..	..
June	2	142	5	22	9	10	6
July	5	647	25	110	20	12	23
August	4	673	26	104	37	12	7
September	5	696	27	134	117	17	16
Total	..	4554	..	929	625	18	2

PRODUCTION BY DISTRICTS FROM 1862 TO 1896.

DISTRICT.	Tons Crushed	Total Yield.			Value @ $19 per Oz.	Average yield per ton.		
		Oz.	Dwts.	Gr.		Oz.	Dwts.	grs.
*Caribou & Moose River.	96848	38024	18	20	$ 722473 89	0	7	20
Montague	21696	37894	1	19	719987 70	1	14	22
Oldham	45100	48990	10	18	930820 22	1	1	17
Renfrew	48142	33869	8	2	643518 68	0	14	1
Sherbrooke	173130	123323	18	8	2343154 42	0	14	6
Stormont	80316	42313	19	13	803965 57	0	10	13
Tangier	42720	20192	17	10	383664 55	0	9	11
†Uniacke	50656	35683	12	8	677988 72	0	14	2
Waverley	121540	60847	1	2	1156094 03	0	10	0
‡Salmon River	95601	39373	7	18	748094 37	0	8	5
÷Brookfield	14360	11534	5	4	219150 91	0	16	1
÷Whiteburn	6343	9535	15	18	181179 97	1	10	1
§Lake Cacha	20734	22757	1	20	432384 74	1	1	23
¶Rawdon, East Central.	12158	9592	7	4	182254 81	0	15	8
Wine Harbour	42711	29140	8	7	553667 88	0	13	5
**Fifteen Mile Stream	27738	15346	3	5	291577 05	0	11	1
Malaga, from '89 to '93.	18567	15180	5	8	288425 07	0	16	8
Unproclaimed & Other Districts	62522	44722	10	3	849727 62	0	14	7
Total to 30th Sept. 1896.	980882	638322	12	19	$12128130 20	0	13	0

*From 1869. †From 1866. ‡From 1883. ÷From 1887. §From 1882. ¶From 1887. **From 1883.

RETURNS YEAR ENDED SEPTEMBER 30, 1897.

THE NOVA SCOTIA STEEL CO., LT'D.

CAMERON AND GRANT MINES.

BRIDGEVILLE, PICTOU CO.

Above ground.

	No.	DAY'S LABOR.
Skilled labor	6	**1663**
Laborers	8	**1759**
Boys	1	**167**

Below ground.

	No.	DAY'S LABOR.
Skilled labor	20	**5595**
Laborers	33	**6914**
Boys	1	**265**

Tons of ore raised, 27,001.

258/44

REPORT

OF THE

DEPARTMENT OF MINES,

NOVA SCOTIA,

FOR THE YEAR ENDING SEPTEMBER 30, 1898.

HALIFAX, N. S.
COMMISSIONER OF PUBLIC WORKS AND MINES,
QUEEN'S PRINTER.
1899.

WM. MACNAB, PRINTER, 3 PRINCE STREET.

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1902

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DEPARTMENT OF MINES.

REPORT FOR THE YEAR ENDING SEPTEMBER 30, 1898.

To His Honor MALACHY BOWES DALY, *Esquire, Lieutenant-Governor of Nova Scotia, &c., &c.*

MAY IT PLEASE YOUR HONOR,—

I respectfully present herewith to Your Honor the Annual Report of the Inspector of Mines, containing an account of the progress of mining operations, together with statistical information compiled by him from official and other returns.

I remain,

Your Honor's obedient servant,

CHARLES E. CHURCH,
Commissioner of Public Works and Mines.

HALIFAX. *December 30th, 1898.*

REPORT

ON THE

MINES OF NOVA SCOTIA,

By EDWIN GILPIN, Jr., A. M., LL.D.,

FELLOW OF THE ROYAL SOCIETY OF CANADA.

Office of Inspector of Mines,

Halifax, *December 29th, 1898.*

To the Honorable
Charles E. Church, M. P.P., M. E. C.,
Commissioner of Public Works and Mines :—

Sir,—I beg leave to submit the following report on the Mines of Nova Scotia.

The following summary shows, so far as I have been able to learn, the mineral production of Nova Scotia for the year ending September 30tb, compared with that for the year ending September 30th, 1897.

	Year ending Sep. 30, 1897.	Year ending Sep. 30. 1898.
Gold..........................oz	26,579	31,104
Iron Ore*†..................Tons	44,146	31,050
Manganese Ore†............ "	100	75
Coal raised†................ "	2,320,916	2,281,454
Coke made†................. "	45,000	42,000
Gypsum†‡.......................	125,000	131,000
Grindstones, etc§................	32,400	38,000
Limestone†..................Tons	25,000	24,000

---

* Not including imported ore.
† Ton of 2,240 lbs.
‡ Amount exported.
§ Value in dollars.

An examination for granting certificates to colliery officials was held during the year, and the following persons received certificates:—

MANAGERS.

John Caddegan,	Bridgeport.
Jas. W. McIntosh,	Thorburn.
Alex. McDonald,	Reserve.
Alex. McEachen,	Bridgeport.

UNDERGROUND MANAGERS.

John Casey,	Glace Bay.
W. A. McKenzie,	"
Alex. Cameron,	Bridgeport.
Thos. Coleman,	"
R. B. Crosby,	"
Rod. McIntyre,	"
John McNeil,	"
Norman McDonald,	"
W. G. Ross,	Reserve.
Angus A. Ferguson,	"
John Munro,	"
John McPherson,	Springhill.
Danl. G. Love,	Thorburn.
W. M. Bartholomew,	North Sydney.

OVERMEN.

Alex. F. Ross,	Westville.
Everett Sutherland,	"
Chas. Martin,	Springhill.
Wm. A. Wilson,	"
Lauchlin McNeil,	Bridgeport.
Neil A. McDonald,	"
Joseph McPherson,	"
Rory Gillis,	"
Angus J McCuish,	"
Andrew Irvine,	"
H. Dickson,	Sydney Mines.
Geo. S. Slavin,	"
J. J. McNeil,	Glace Bay.

At an examination, held Oct. 26, 1898, certificates as follows were granted to candidates for positions in connection with engines used for raising and lowering men into and out of the mines.

FIRST CLASS.

Joseph J. McKinnon,	Sydney Mines.
R. J. Bell,	Stellarton.

SECOND CLASS.

Neil McDonald,	Bridgeport.
Dan A. McDonald,	"
Kenneth Morrison,	"

THIRD CLASS.

Angus C. McNeil,	Amaguades.
John McNeil,	Sydney Mines.
Augustine McDonald,	"
Thos. W. Carr,	"
Michael J. Hartigan,	"
John Frances,	"
Alex. McInnis,	Dom. No. 1.
Hugh McDonald,	Bridgeport.
Walter Grahame,	"
Dan. McKeigan,	"
John A. McDonald,	"
George Miller,	Mira,
Philip Smith,	Port Morien.
Walter McAulay,	"
John Kinian,	Stellarton.
Alex. Ross,	Westville.
John Purvis,	"
William McGillivary,	"
Chester Bowlsby,	Joggins.
John E. Redhead,	Springhill.

The local boards have continued during the year to examine candidates for miner certificates.

During the past year surveys have been made at Upper Newport, Liscomb Mills, Leipsigate, Stormont, Whycocomagh, Renfrew, North West, Upper Glencoe, Montague, Ecum Secum, Middle River, Clam Harbor, McMillan's Lake, Shier's Point, etc.

I beg leave also to submit a report on the Middle River, Whycocomagh and Cheticamp districts of Cape Breton by I. Edward Woodman. This gentleman, who has already been engaged in geological work in the Province, is associated with Professor Shaler of the Geological Division at Harvard University: Owing to unavoidable causes he was not able to spend as much time in the field as had been originally intended. He was, however, enabled to make a somewhat extended examination of the localities referred to.

In view of the attention periodically drawn to the Middle River as a source of gold and the assertions that the district was valueless from a miner's standpoint; in view of the claims made for Whycocomagh as a rich alluvial and gold and silver mine district, and of the discredit thrown upon it by those who were disheartened by not finding immense free gold ledges on the surface of their areas, with little or no expenditure of money or work; and in view of the collapse of the Cheticamp River as an alluvial gold field, it was deemed advisable to secure an opinion from a disinterested source.

I have on several occasions drawn attention to the probability of the northern part of Cape Breton yielding valuable deposits of gold, silver, lead and copper. However, as an outside opinion was worth more than one from officials of the Provincial Government, and would carry more weight with the world at large, Mr. Woodman's services were secured.

He approached the subject with no predetermined views, and you will be pleased to learn that he considers the districts promising, and that their mineral possibilities have been very much under-valued, and that they should, if properly prospected and developed, prove valuable additions to our mineral wealth.

In my report to your Hon. Government on the gold and other ores of Nova Scotia, reference was omitted to the Lake Catcha Gold district. I have inserted in the reference to the Gold districts in operation last year, such notice of the district in question as was given to other important districts in the report. I may say that this report, a large edition of which was printed, is being circulated in England, Canada and the United States, and has, I believe, led to enquiries about our gold mines.

Last year Mr. William Maddin, Jr., who had acted as Deputy Inspector for the Cumberland and Pictou districts, resigned, and accepted a position as Deputy Inspector under the Dominion Government in the Yukon district. His duties were ably and efficiently discharged during his term of office, and he acquired the respect and confidence of all persons in connection with his duties as Inspector. He was succeeded by Mr. Malcom Blue, ex-manager of one of the Collieries of the Cumberland Railway & Coal Co. of Springhill.

COAL TRADE.

The returns of Coal sold during the year 1898, show, in comparison with those of 1897, as follows :—

	1897.	1898.
Nova Scotia	641,308	667,252
New Brunswick	242,043	266,789
P. E. Island	62,032	93,241
Newfoundland	75,990	62,051
Quebec	875,874	944,160
West Indies	9,356	......
United States	106,279	98,027
Other Countries	....	3,877

The production was 2,281,454 tons compared with 2,320 916 tons in the year 1897.

There is an increase in the sales in Nova Scotia, New Brunswick, Prince Edward Island and Quebec, the sales to the last named point coming close to the million mark. There has been a decrease in the Newfoundland and United States sales. It is confidently expected that in a few weeks shipments of gas coal to Boston from Cape Breton Collieries will be commenced on a basis of at least 700,000 tons per annum. If this be carried out and no unforeseen obstacle intervenes, the total sales of next year should be in the vicinity of 3,000,000 tons.

The total sales for the year were, 2,135,397 tons, compared with 2,013,421 tons in 1897.

CUMBERLAND COUNTY.

SPRINGHILL.

During the year the fire in the east slope was totally extinguished. The west slope was rebuilt, and the north bankhead and all other underground workings put in good order. The quality of the coal has materially improved to the dip. A tunnel has been started to prove the underlying seams, several of which are of workable size. Explorations have shown that the three worked seams form another basin to the south, thereby greatly enhancing the value of the property.

Work was continued as usual at the Joggins. In the fall some trouble was experienced with water. Little was done at the small mines. The sales of the county were 352,270 tons compared with 339,220 tons in 1897. The sales of the Springhill Mines were 287,792 tons; of the Joggins Mines 64,113 tons.

PICTOU COUNTY.

There have been no new developments of interest in this county during the past season. The sales were, from the Acadia Collieries 173,167 tons, and from the Intercolonial Colliery 208,248 tons. The total sales being 381,415 tons, compared with 340,234 tons in 1897 and 351,693 tons in 1896.

The operations at the Pictou and Cumberland Mines were inspected as usual by Mr. Maddin up to July, when the work was taken up by Mr. Malcom Blue, of Springhill. Mr Blue holds a manager's certificate, and was for a number of years in charge of one of the Springhill Collieries. I have no doubt he will discharge his important duties to your satisfaction. A brief report from him will cover the interval between Mr. Maddin's resignation and the close of the year.

WESTVILLE, N. S., June 30th, 1898.

E. GILPIN, ESQ.,
Deputy Commissioner and Inspector of Mines
for the Province of Nova Scotia.

DEAR SIR,—

I have the privilege of herewith submitting you a condensed report on the various coal mines in the districts of Pictou and Cumberland counties. This will not be a full year report, but will cover from September 30th, 1897, till June 30th, 1898, at which time I tendered, and the government accepted my resignation.

McGREGOR PIT, ALBION MINES.

Since my last report very little has been done at this mine. The levels on No. 6 "lift" which is down 3596 feet have been extended east and west 600 feet and 400 feet respectively. They are still sinking the slope, which is now down 5018 feet. The last two or three hundred feet is level, or nearly so. There is now in sight a block of good marketable coal 3000 feet x 9000 feet x 8 feet, having only the "levels" driven through as mentioned above. The ventilation in this mine is very good.

THIRD SEAM SLOPE.

In my last report I stated that the sinking in this slope was down 700 feet. This distance has been increased to 1000 feet, and the "level" will be advanced 1100 feet, when this seam will be connected with Cage Pit Seam by a "tunnel." This will make a splendid "lift" of coal. An engine has been placed on the Cage Pit "level" and the "slants" between the Cage Pit and Foord Pit have been cleaned to a depth of 700 feet, or to the point at which the water floods the Foord Pit. This is where the seams will be connected.

From the "slants" westward there is a block of coal about 5000 feet x 600 feet x 10 feet, through which four "back-balances" have been driven up to the main haulage "level." The third seam is also about ten feet in thickness and seven thousand feet in breadth. The coal on main "level," east side, has all been won for a distance of about 1200 feet from the face of the "level." On the west side the "level" was stoped at a distance of 6000 feet from the "slope," and the "pillars" are now being drawn from this point back to the old broken, which will be a distance of 900 feet. The small overlying seam has been worked to good advantage. There is a very large amount of coal now in sight in these seams and the ventilation is very good.

ACADIA MINE, WESTVILLE.

The lower "lift" in this mine, which I described in my last report, is still being worked on the same principle. The "level" on the south side is now in 1800 feet. 1700 feet in from the "slope" a "jig" has been driven up to the 4000 feet "lift," which shortens the air return and makes a marked improvement in the ventilation. 1300 feet in from the slope, on the north side level, which is in 1600 feet from the "slope," another "jig" has been started up the hill to connect with the 4000 feet "lift" also. When completed it will serve for the same purpose as the one already mentioned on the south side, viz., to improve ventilation. The coal has been taken out on the south side from the face of the "level" on the 4000 feet "lift" to within 2500 feet from the "slope." On the north side it is all out from the face of the "level" to within 1700 feet of the slope. This mine is now in as good a working condition as it has been for several years.

DRUMMOND COLLIERY, WESTVILLE.

All the coal on the south side of the 4000 feet "lift" has been successfully taken out, except the "pillars" on No. 1 balance, and these are being drawn rapidly. On the north side, same "lift," all the coal is out. In my last report I stated that there were five "bords" working on the inside "balance," of the 4400 feet "lift." These five "bords" were driven as far as the coal was considered good, and the "pillars" drawn. The "bords" on the adjoining "balance," 400 feet outside of this one, have been driven through to the inside "balance," and "bords" have been started on a third "balance," 400 feet still further outside of this one. Owing to the great weight at this depth, the management are experiencing some difficulties in winning the coal.

The north "level" on the 4400 feet "lift" was stoped last November at a distance of 3523 feet from the "slope," and the inside "balance" on this "level," which I mentioned in my last report as being driven through to the "lift" above, was started on the "longwall" system. The mode of operation is as follows:—

"Pillars" 48 x 70 feet are left next the balance, this leaves the "cuts" about 55 feet each in breadth, and they are kept about 30 feet in advance of each other. The timbering which is done by "shiftmen" is done in the following manner: — Two rows of "packs" are carried, the one on the high side of the road, the other on the high side of the "cut." The row of "packs" on the high side of the "cut," supports the roof on the low side of road for the next "cut," and so on up to the "lift" above. At a distance of 400 feet outside of this another "balance" has been driven through to the "lift" above, which will be worked on the same principle.

The length of this "slope" has been increased to 5006 feet since my last report, at which point a "fault" was encountered. The course of the "slope" is S. 79° E. (Magnetic 1897). The "fault" runs S. E. by N. W. 45°. A "place" was driven nearly at right angles to the "fault," and on an average pitch of 55°, proving the displacement to be 35 feet vertical. The coal on the other side of the "fault" was found to be lying in good order and of an excellent quality.

NUMBER FOUR SLOPE, (Drummond Colliery.)

This "slope" which was idle all winter, resumed operations on April 1st. They are merely continuing the work which was commenced last year, viz, drawing "pillars." I am pleased to state that this slope as well as Nos. 1 and 2, is in good condition, and well ventilated.

SCOTT PIT, (Drummond Colliery.)

This mine is undergoing complete repairs. The old "fan shaft" on the main seam (which is 19 feet thick at this point), 63 feet in depth, was retimbered and continued to a farther depth of 218 ft., 6 in. to the Scott pit seam, which is 12 ft., 3 in. thick at this point.

The "shaft" was then continued 79 feet, 3 inches further, at which point the third seam was struck. The third seam at this point is 8 feet, 6 inches. The shaft was then continued 7 feet 6 inches for the purpose of a "sump," making a total distance of 408 feet, and finished 10 feet x 10 feet in the "clear." The hoisting shaft at this mine was 225 feet deep, and 12 feet 10 inches x 5 feet 10 inches in the clear. At the time of the explosion in 1893, caused by lightning, this shaft received considerable damage, the bottom timbers were blown out, allowing the measures to slip away from a height of 40 feet. It is now undergoing complete repairs by being enlarged from top to bottom to a size of 12 feet by 10 feet in the clear. The old fan which was used to ventilate the main seam will remain and ventilate the Scott pit now, and the third seam when required.

SPRINGHILL MINES.

The fire which started in the pipe slope, No. 1, on December 24th, 1896, was extinguished December 31st, 1897. As I mentioned in my last report, this was an old pipe slope which had been in use 20 years, and the surrounding "pillars" were badly crushed by escaping steam, heat, etc., consequently it was quite an undertaking to extinguish it. The great difficulty was to confine the fire to the pipe and main slopes, it having reached the main slope before it could be built off. Owing to the great heat and pressure, rents or breaks were continually occurring through which the fire would rapidly make an appearance, but the management, ever watchful for such an emergency, would extinguish these outbreaks and rebuild the openings before the fire could make much headway.

The fire was extinguished in the following manner:—The Company has several reservoirs which are connected together. These occupy an elevation considerably higher than the mouth of the slopes. From these reservoirs a line of pipe was conducted down the pipe slope to the 800 feet "lift," thence across to the travelling slope and up this slope to the top "head." At each "head" along these slopes, valves and rubber hose were attached. The "stoppings" across the slopes at the 800 feet "lift" were likewise provided with valves and hose. The water pressure on these pipes, at the 800 feet lift, was about 200 pounds per square inch. A 4 inch steam pipe was led down the travelling slope to the 800 feet lift, and turned up through the bottom "stopping" on the main slope. Another 4 inch steam pipe was led direct from the boilers on the surface to the mouth of the pipe slope, and entered through the stopping at the surface. The steam pressure on these two pipes was 45 pounds per square inch, and this was maintained day and night for about ten months. The application of steam and water at so many different points, and for such a period of time undoubtedly had much to do with the extinguishing of the fire, but I think a still greater effect was had from another source. Large quantities of surface clay and earth were hauled from time to time, and deposited at the entrance of the pipe and main slopes.

A valve was placed in the bottom " stopping " of the main slope to relieve the water pressure when a large body accumulated. A large volume of water was then turned on, which washed the clay and earth down the slopes and over the region of the fire, causing the sediment to be almost universally distributed. When a crush occurred which caused an opening to the fire, muddy water rushed out, and when this ceased all clefts and crevices were found coated with sediment. Upon opening these slopes it was found that the only points at which the fire still burned was where "falls" had diverted the earth and water from their course. The temperature for eight or nine months after the fire originated was from 200° to 212°. When the slopes were opened the temperature was 164°; but by spraying with water and keeping up a good current of air to draw off the steam and fumes, the temperature was soon reduced to a minimum and the fire totally extinguished. This is the first instance, to my knowledge, in which earth and clay were used in this manner, and in large quantities, and I have no hesitation in concluding that they were the greatest factor employed in extinguishing this fire.

This is the second fire the present management have successfully dealt with, and at present the mines are all in good condition. A new bankhead has been erected at No. 2 slope, which is fitted up with all the latest improvements for handling coal. The slope has been retimbered and laid with heavy fish-plate rails down to the 2600 feet lift, preparatory to increasing its output. This slope will soon, in all probability, be the largest producer, as the " pillars" from No. 1 slope will be taken out through it by means of the tunnels which are now completed, and preparations are now being made to begin drawing them at an early date.

No. 3 SLOPE (SPRINGHILL MINES.)

They are still drawing " pillars " on the 1800 feet " level,". west side. All on Nos. 6, 7, 8 and 9, " back-balances," also " railroad pillars " have been successfully drawn, and Nos. 5 and 5½ are now being drawn. There is still a block of coal 2000 feet x 500 feet between No. 5 " balance " and the slope.

The tunnels on the east side which were being driven in order to connect with the underlying seam (3 feet 9 inches thick) are still being pushed forward. The " levels " are now in about 2000 feet, and at intervals of 300 feet shoots are driven up. This is a very fine seam of coal.

On the 2600 feet " lift " the " level " on the west side is in 2600 feet, and two " back-balances " have been driven up to the 1800 feet lift. This slope has been sunk another " lift," which makes it now 3200 feet in depth, and " levels " have been turned off at right angles at the bottom. It is a fact that all our coal seams improve in quality towards the deep, but in this seam the improvement is greater than usual. The small bands of coarse coal, which render it difficult to make clean coal, have entirely disappeared, and nothing now remains but the pure coal, which to all appearance is much superior in quality to that which was nearer the rise.

The pipe slope is nearly all on packs of timber, with iron rails for booms and iron hangings for steam pipes. The airways are good and the mine at present is in first-class condition.

THE JOGGINS MINES.

In my last report I stated that the management of this mine were very busy making connections between Nos. 2 and 3 slopes. This they have accomplished, and the " lift " of coal gained by this operation, being nearly worked out, the management have found it necessary to sink No. 3 slope still deeper in order to increase their output. After sinking it an additional 600 feet, owing to the accumulation of water, and the fact that No. 2 slope is down 3000 feet and full of water to the 1900 feet " lift," it was found necessary to introduce a large pump. This, I am informed, they have procured, and a new pipe slope is being constructed on the east side of No. 2 slope. It is the intention of the management to get all the water out during the dry season, and then build a permanent house for the pump. When this is completed Nos. 2 and 3 slopes will be connected at the 2600 feet lift, which will give a very large block of coal. The work on No. 3 " balance " 1900 feet lift is being advanced as usual. This " lift " of 600 feet is being worked " longwall " and very satisfactorily too. The little fan has developed good results, the mine is well ventilated, and in good condition.

MINUDIE MINE.

Leander McAloney sunk a slope on a seam of coal which underlies the old Minudie Seam, at which he employed several men for 3 or 4 months. This seam which is from 20 to 26 inches thick has only been tested along the crop to a depth of 50 or 60 feet.

OLD LAWSON MINE.

Jeffery Lockhart employed 2 or 3 men for 3 months and took out some coal from the crop of the Second Seam on this property. The seam is about 3 feet thick.

SMITH'S MINE, (Maccan Station.)

Abner Ripley employed from 2 to 6 men in the mine during the year. He sunk the slope an additional 50 feet, making the total 140 feet. There are two seams in this slope, with a vein of fire clay and shale, about 6 feet in thickness, running below. Both these seams were tried to the north for about 600 feet; but very little was done on the south side.

SCOTIA MINE.

This mine has worked about seven months, employing from 3 to 9 men. There are two seams on this property which are 3 feet 8 inches and 3 feet thick respectively, and both are being operated. There was a fire in this mine about 3 years ago; but it has since been extinguished and the mine is in good condition.

The owners have complied with the law and employed a certificated underground manager.

THE JUBILEE MINE.

This mine is situated about two miles from Maccan Station on the line of the Joggins Railway with which it is connected by a branch. A slope 190 feet in depth was sunk on one of the seams, which is 20 inches thick and of an excellent quality.

The "levels" have been driven east and west 300 feet from the slope. The coal to the rise is being worked "longwall" and can be done very cheaply. They have a very nice hoisting engine and boiler, and a good pump. The water in this mine does not accumulate very rapidly, owing to the fact that they have a good vein of blue clay overlying their coal measures which prevents the surface water from getting in. This mine also complied with the law in reference to certificated mine managers, and I am pleased to state that everything is in first-class condition.

CHIGNECTO MINE.

A sample of coal from this mine has been tested for coking purposes, and I am informed that the results were very favourable This is about all that has been done at this mine. James Baird late manager of Joggins Mines, superintended this work.

VALE COLLIERY, (Thorburn.)

On the morning of the 30th of January, the bank-house at this Colliery was totally destroyed by fire. The night watchman says he left the bank-house at about 5 o'clock a. m., and that everything at that time was as usual and no indications of fire apparent. Shortly afterwards the man in charge of the boilers, close at hand, discovered that the buildings were on fire and immediately blew the fire whistle. Soon nearly all the inhabitants of the village were on the scene and .l worked with a will in order to save the buildings if possible.

The extinguishing of the fire, however, proved too great a task for their engines, owing to the fact that the bank-house, which was twelve years old, had been so saturated with oil and grease that the flames kept spreading with increased rapidity. The manager then, seeing that it was impossible to save the bank-house, turned his attention to the mine, boiler-house and engine-house, which were now in danger.

For a time it looked as if these, too, were doomed. The bank-house was cut clear from the mine, and although there was plenty of water, good pumps and hose, and plenty of miners, who fought the flames only as miners can, still it taxed their energies to the utmost to save their property. However, after a desperate struggle, this was accomplished, so that the bank-house, with some of its contents, was all that was destroyed. Had it not been for the persevering efforts of the miners of Thorburn on that occasion the loss of property would have been much greater, and too much credit cannot be given them for the heroic efforts put forth to save the property of the company.

A temporary bank-house was at once erected, and 200 tons of coal raised for immediate use, during which time preparations were made for a permanent structure. The new bank-house was started about the 1st of March and completed about 1st of April, at which time they resumed hoisting coal.

This mine has been idle the greater part of the year. The principal work done was on the east side where the level has been extended 500 feet. Two "back-balances" have been driven up from the "level" with 12 "bords" on one and 10 on the other. The airways and the mine throughout is in very good condition.

I have the honor to remain,

Yours very faithfully,

WILLIAM MADDIN, Jr.,

Deputy Inspector of Mines.

Amount of Air in circulation per minute in the Underground Collieries as per measurement at each official visit.

MINE.		COUNTY.	1897.			1898.								
			Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apl.	May	June	July	Ang.	Sept.
Acadia Mine		Pictou	60000	59200	52700	58000	57200	55600	53900	54900	......	......	......	......
McGregor Pit		"	121000	118000	139000	116920	109920	107000	104200	106000	......	......	......	......
Third Seam		"	67700	68000	69700	72300	74120	74000	73700	72500	73000	......	......	......
Six Foot Seam		"	22600	26000	33000	32700	Idle	Idle	30000	31700	......	......	......	......
Drummond Colliery	Mines Nos. 1 & 2	"	74000	82000	79800	77240	75700	81700	76200	79700	80000	......	......	......
	" No. 4	"	9000	10000	Idle	Idle	Idle	Idle	13500	14000	14500	......	......	......
	Scot Pit	"	Idle	Idle	Idle	Idle	Idle	Idle	Idle	40000	......	......	......	......
Springhill Mines	No. 1	Cumberland.	......	20000	22500	Idle	23000	Idle	Idle	Idle	22500	......	......	......
	No. 2	"	74200	70400	59900	74000	72000	75500	70700	70200	71000	......	......	......
	No. 3	"	80300	92800	97500	107000	104200	101700	87000	81700	80500	......	......	......
Joggins Mines	No. 2	"	20000	23000	25700	27700	30900	Idle	30000	26100	27000	......	......	......
	No. 3	"	22000	24000	28500	29200	29800	Idle	29700	33000	33500	......	......	......
Minudie Mine		"	Idle	1000	900	Idle	Idle	Idle	Idle	Idle	......	......	......	......
Smith's Mine		"	Idle	500	700	700	800	Idle	Idle	Idle	......	......	......	......
Scotia Mine		"	1500	1500	1700	2000	2100	2000	Idle	Idle	......	......	......	......
Chignecto Mine		"	500	550	400	800	600	Idle	Idle	Idle	......	......	......	......
Jubilee Mine		"	1750	1100	1900	2100	4400	4200	Idle	Idle	......	......	......	......

Date of Official Inspections.

MINE.	Locality.	County.	1897.			1898.								
			Oct	Nov.	Dec	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.
Acadia	Westville	Pictou	21	18	21	15	17	21	21	18	....	....	....	....
McGregor Pit	Stellarton	"	20	12	14	13	14	8	Idle	12	....	....	....	....
Third Seam	"	"	19	11	13	12	15	7	20	13	9	....	....	....
Six Foot Seam	Thorburn	"	11	10	9	26	9	11	Idle	Idle	....	....	....	....
Drummond Colliery	Westville.	"	16	15	11	11	16-21	10	19	10	8	....	....	....
" No. 4	"	"	18	16	Idle	Idle	Idle	Idle	18	17	13	....	....	....
" Scott Pit	"	"	Idle	Idle	Idle	Idle	Idle	Idle	18	17	....	....	....	....
Springhill Mines, No. 1	Springhill	Cumberland.	Idle	4	3	4	1	2	5	Idle	2	....	....	....
" No. 2	"	"	Idle	4	2	6	2	2	6	4	2	....	....	....
" No. 3	"	"	1-2	3	2	5	2	1	6	3-14	3	....	....	....
Joggins Mines. No. 2	Joggins	"	4	1	1	7	4	Idle	1	5	4	....	....	....
" No. 3	"	"	4	1	1	7	4-18	Idle	1	5	4	....	....	....
Minudie Mine	....	"	5	2-30	Idle	7	Idle	Idle	Idle	Idle	....	....	....	....
Smith's Mine	Maccan.	"	5	2-30	Idle	8	5	Idle	Idle	Idle	....	....	....	....
Scotia Mine	....	"	5	5-29	Idle	8	7	3	Idle	Idle	....	....	....	....
Chignecto Mine	....	"	Idle	5	Idle	8	7	Idle	Idle	Idle	....	....	....	....
Jubilee Mine	....	"	4	1	4	8	5	3	Idle	Idle	....	....	....	....
Charcoal Iron Mines	Bridgeville	Pictou	15	25	....	22	....	25	10	....	....	....	....	....
Lawson Mine	....	Cumberland.	4	2	4	7	....	4	....	....	....	....	....	....
Fifteen Mile Stream	....	Halifax	....	....	....	19-20	....	....	....	....	....	....	....	....
Mitchell Mine	Thorburn	Pictou	....	....	....	....	9	11	....	....	....	....	....	....

ACCIDENTS.

No.	Date.	Mine.	Name.	Occupation.	Remarks.
1	1897 Oct. 9	Third Seam.	James Roche.	Cage Runner	The cage was derailed and caused him to break his arm.
2	Nov. 4	Acadia Mine.	Allen McLeod.	Miner.	Caught in a full rake, breaking his jaw; also cutting his head.
3	Dec. 2	Drummond Colliery	Michael Breen.	Sinker.	Struck on the head by a piece of rock from side of shaft and killed.
4	" 8	No. 1 Slope, Spr'hill.	James Ferguson.	Shiftman.	Killed by a fall of roof while opening No. 1 slope, which was on fire.
5	1898 Feb. 8	No. 3 Slope, Spr'hill.	William Price.	Loader.	Injured on the head by a fall of stone in the last 2600 ft. level.
6	" 16	No. 3 Slope, Joggins.	Clarence Ripley.	Miner.	Leg broken by fall of coal at working face.
7	" 17	"	Emil Lefavour.	"	Struck by a cage loaded with a box of stone and killed.
8	" 21	Drummond Colliery.	Andrew Darrah.	"	Darrah and Simpson were killed by a fall of top-coal, at working face in No. 1 pillar No. 11 landing on the 4000 ft. lift. Gray was injured by same fall, same time and place.
9	"	"	Robert Simpson.	"	
10	"	"	William Gray.	"	
11	Mar. 5	Third Seam.	Donald McKay.	Miner.	Killed by a fall of coal from working face, pillars.
12	Apl. 11	No. 4 Slope, Drum'nd	David Wilson.	Loader.	Injured by a prop striking him and died 4 days subsequent.
13	May 12	No. 3 Slope, Spr'hill.	John Boran.	Miner.	Killed by a fall of stone from the roof in his working place.
14	Jun. 22	Drummond Colliery.	R McLellan.	Stone picker.	Caught between picking table and receiving apron, smashing his ankle necessitating an amputation.

SPRINGHILL, 30th Sept. 1898.

DR. E. GILPIN.

Deputy Commissioner and Inspector of Mines :—

DEAR SIR,—I beg to submit to you a report of my visit to the mines of Pictou and Cumberland Counties, and am pleased to say that I found everything at various Collieries in very good order. I suppose that my predecessor, Mr. Maddin, has made out a full report of work and prospects at the various mines, which will reduce mine very materially. I regret to report the following accidents, viz:—August 15th, No. 4 Slope, Drummond Collieries, John Graham (boy,) arm broken subsequently amputated, getting on Rake in Slope while in motion.

September 9th, 1898, McGregor Mine (Albion), while shunting coal Thos. Stewart (Overman) and James Campbell (Slope Bottomer,) the box jumped the track at the switch and sided over on the men, breaking Campbell's leg a little above the knee and Stewart's ankle is badly sprained.

By the resignation of Mr. Thos. Blackwood, Joggins Mines, Walter Johnston, Esq., is now the underground manager. Donald Hayman the U. G. M. of the Drummond Collieries, resigned and John McDonald now holds that important position.

A number of men were discharged at Thorburn lately, the mine is now running fairly steady with several sets of men employed.

NO 2. SLOPE, SPRINGHILL.

In August a Tunnel 6′ × 6′ was started on the West Level 350′ from Slope Bottomer, this Tunnel is supposed to cut several valuable seams of coal underlying No. 2, distance at present driven 60 feet.

I have the honor to remain,

Yours very truly,

M. BLUE.

CAPE BRETON COUNTY.

The sales from this county amounted to 1,390,596 tons, compared with 1,321,653 tons in 1897. The out-put was almost entirely from the Dominion Coal Company, which raised 1,155,311 tons, and the General Mining Association which raised 273,904 tons. The sales in Nova Scotia showed a small increase, as do those to Newfoundland. The sales to Quebec were 822,611 tons against 773,602 tons during the preceding year. I append the report of Mr. Neville, D'y. Inspector, in which a description is given of a "crush" on the Caledonia Mine. These crushes rise in many cases from allowing too large an acreage to stand on pillars. The subject of too great an extension of pillars was dwelt upon in a recent report made to you, and it is to be hoped that the matter will receive in Cape Breton that attention already bestowed upon it in Pictou and Cumberland Counties.

E. GILPIN, JR., ESQ.,

Deputy Commissioner and Inspector of Mines.

DEAR SIR,—I beg leave respectfully to submit my report to you of the coal mines in Cape Breton for the year ending September 30th, 1898.

DOMINION NO. 1.

The levels and deeps have been kept going pretty steadily during the year. They are as follows:—North deeps have been driven down seven hundred and thirty-five feet, making a distance of four thousand three hundred and thirty-five feet from pit bottom, also the south deeps were driven five hundred feet making a total of three thousand feet. No. 2 south level was driven twenty hundred feet. No. 3 ditto three hundred and eighty feet, No. 4 ditto nine hundred feet, No. 5 ditto eleven hundred and No. 2 north four hundred feet. The travelling road mentioned in last year's report has been finished early last spring and is a great convenience to the colliery. The door that you gave instructions to have placed between this colliery and Bridgeport on the travelling road, in case of an explosion, has been put in substantially with thick sills and strong mason work. The back south deep has been widened from eight to twelve feet in width in order to give more freedom to the air to go through. The irway [illegible] e bottom of the fan-shaft has been straightened and [illegible] h has improved the ventilation very much. On the [illegible] belts and shaking screens have given good satisfaction. During the season a line of new six inch pipe has been laid a distance of three thousand three hundred feet from Bridgeport to this colliery, which gives a good supply of water to the miners' houses and the colliery.

OLD BRIDGEPORT.

The south deeps have been driven down nine hundred and sixty feet from where they intersected the main slope from the Reserve mine mentioned in my last year's report and a section of rooms opened. Eight Ingersoll coal-cutting machines are at present employed in this section of the mine. The remainder of the places are worked by hand-picks, also a few of the pillars on the south side of the deeps are at present being extracted. On the north side of the pit the deeps have been driven down about thirteen hundred feet below the old water-level that leads to the sea shore and rooms broken off going north and south. This district is altogether worked by coal-cutting machinery. A landing was made at a point seven hundred feet down from the water-level and the coal is taken up the deeps to the shaft by a small Jenks engine with 8″ cylinders 12′ stroke and 2 drums 4 feet diameter each and geared 5½ to 1 and worked by compressed air. A new reservoir has been made this year about two hundred feet below the old one, having a capacity of about ten million gallons of water, also the old reservoir has been made much larger by raising the overflow, and about five acres of land have been cleared and grubbed in order to make standage.

INTERNATIONAL.

In this mine levels and headways have been extended in the ordinary courses of working and rooms broken off. The endless haulage has been extended in the bottom south level by driving a curved road connecting the deep and the level. A Lancashire boiler has been set up at the borehole and a new shed built over it. This boiler is now supplying steam to the pump at bottom of borehole, and the exhaust steam instead of going down in the lodgment (thereby injuring the roof) is now led up to the surface, giving good results. Also a trestle has been built in front of the boiler shed enabling a locomotive to run the cars up and empty the coal at such an elevation that it will run directly on the plates in front of the boiler where it is used. A rotary screen has been put up on the bank head which separates the slack coal into four different sizes, replacing the ordinary bar-screens which were used for that purpose. I may say that the ventilation is good, the pit well timbered and the regulations of mines act well observed.

RESERVE MINE.

The improvements at this Colliery during the year are as follows: An air compressor which formerly worked at Gowrie

Mines was set up and runs six Ingersoll coal-cutting machines, four pumps and one small endless haulage engine. A range of pipe from the compressor to the machines, of the following size and lengths, were laid: 100 feet of 7 inch standard pipe, 2,500 feet of 5 inch, 700 feet of 4 inch, 600 feet of 4 inch and 1,000 feet of 3 inch pipe. The above mentioned haulage engine was also put in place, which drives an endless rope 6,600 feet from No. 1 South Level, doing away with horse haulage on that road. A telephone was put down 4·000 feet, which connects the French Slope with the office and bank-head, which is found very convenient. The deeps on the French Slope were driven 500 feet and a level started near the bottom, going North and South, which are 340 feet and 320 feet respectively, on which landings are being made. A water level is started down towards Dominion No. 1 in order to carry the water that way. It is at this date driven about 260 feet and No. 1 South level 220 feet. All the above improvements were in the East side or French Slope. Nothing of importance has been done in the Main or West Slope except the ordinary workings and extraction of pillars, which has been very successfully and carefully carried on.

HUB COLLIERY.

A few rooms to the rise of the North Level, leading from the shaft, have been working, but nearly all the coal that has been raised this season has been taken from No. 1 and No. 2 landings on the deep. On the 15th of March last the deeps, that were standing idle for some months, were again put in order and work resumed. Coal cutting machines were put in to drive them, and it was found that they did better than the hand picks. On the 31st of October, 1898, they were driven down 2,256 feet from the shaft level and out of this distance the deeps are from land to the face of the deeps 1,264 feet. Very little more water is showing as they advance than where they went under the sea at first.

The dip seems to be more regular than usual, not being so many rolls in the bottom. The coal looks well. A Champion fan was erected near the up east pump shaft, which gives good results. All necessary repairs have been made and mine-machinery, ropes, etc., kept in good order, pit well timbered and ventilation good all through.

CALEDONIA.

On the surface an additional Babcock Wilcox boiler (water tube) has been added, making a battery of 4 of these boilers in all, or 800 horse-power, which gives sufficient steam for the efficient working of the Colliery. Air hoists have been added to the screening and loading apparatus for the raising and lowering of the shoots leading into the cars, which very much facilitates the handling of the output, avoiding much of the breakage of coal which accompanied the old method. Underground the endless haulage in the West level was extended 2,500 feet, making 11,880 feet of rope in this level. In the West deep level it was extended 2,500 feet, making 9,424 feet of rope in this level. In the East deep it was extended 300 feet down the new lift and a branch carried from same rope into the East level of this deep 2,000 feet, making 10,610 feet of rope in this deep and level. This makes 32,000 feet of rope in this Mine used as endless haulage and driven by one 23″ x 42″ engine on the surface, the ropes being conducted down the shaft. The East deeps have been completed and the West and East levels started away from them. The West deep has been driven down 900 feet and a small air engine placed in the Mine to hoist therefrom. All levels are being steadily pushed ahead.

The underground stables have been made larger. They are lighted by electricity, as is also the shaft bottom and parts of the main haulage ways.

In January of this year, an old section or district of this colliery known as No. 4 West East deep, started to cave in, crushing the pillars and timbers all over the section, in places forcing the pillars into the pavement. It was feared for a time that it would cross the East deeps, extend into the adjoining district, and thereby lose one side of the mine, so that very prompt and efficient action was called for. A force of 100 men was provided with safety lamps, and put to work timbering outside and withdrawing timber inside to try and stay its progress. Several times the timber-barrier erected to stay its advance was crushed, and the force withdrawn to a place of safety. Fortunately with the assistance of a barrier pillar and many strong timber-packs and timber, 'twas stayed, and the main deeps and haulage-ways saved. The men worked in gangs of 50 at night and 50 by day for 20 days, before it was considered safe. While the men were at work, capable and experienced men were kept in advance of them, and skirting the crushed district. Considerable displacement and damage was caused on the surface by the earth's subsidence. In Nos. 4 and 5 Section East side, where, in the years 1895 and 1896, that section was dry and somewhat dusty, during the past year, no signs of dust of any account is to be seen, this place being quite damp.

NEW CAMPBELLTON.

The Slope has been extended three hundred feet, from the bottom of which levels have been turned off North and South, the North 100 feet and the South 60 feet, and rooms broken off. The level of the lift above has been extended North 250 feet and South 100 feet. The travelling way has been much improved and the greater part of the Slope retimbered. The Northey pump that was stationed at the upper landing has been placed in the low lift, where it delivers the water to the upper level, thus doing away with the small pump that was below and the necessity of the pumps at the upper landing. A 12-foot Sturtevant fan has been put in operation near the top of the up-cast furnace shaft. It is driven at present by a belt from an engine near by, which did fairly well, but the management intends before spring to have the engine working direct, which will give better results. The hard, bright-looking coal, somewhat resembling cannel coal, as mentioned in my last report, is still showing through the seam. There have been 12,853 tons of coal mined, and 100 kegs of powder, each containing 25 lbs., used in blasting that amount of coal. There has been shipped this season from the Dolomite Mine 1,400 tons.

SYDNEY MINES.

This Colliery, as usual, has worked steadily during the year. Ten new 6-ton coal cars have been added to the stock, also 8 new workmen's houses. A new haulage engine has been erected on the surface to take the place of the underground North side haulage engine, the ropes from which are taken down the shaft over 60 in. pulleys. This engine has two horizontal cylinders 16 in. diam. × 30 in. stroke, geared 3½ to 1, two drums 6′0″ diam. x 2′2″ wide, friction clutch gear and brakes. It will haul coal from a distance of more than 1¼ miles from the pit bottom. Another Lancashire boiler 28′ long x 7′ diam. has been added to the stock, completing a battery of five Lancashire boilers in all.

In the pit the main deeps North and South have been extended 1,000 feet and 900 feet respectively. A double road has been made from pit bottom leading south for a distance of 2,300 feet to where the roads leading from No. 4 and No. 1 districts meet. A telephone has been put in connecting the pit bottom with the engine-house on surface. One double cylinder friction drum winch 7 in. x 10 in., gear 5 to 1 drum 26 in. diam. x 24in., has been put in to work South side secondary haulage. This winch is placed one mile from the pit-bottom in the South side workings and operated by compressed air.

The new shaft that this company commenced to sink in July last year reached the coal on 21st July last at a distance of 472 feet from the surface. The seam of coal passed through at this point is 4′ 4″ thick. The intention is to sink still further to test an underlying seam presumed to exist some 200 feet lower down. In the sinking of this shaft from the commencement every precaution has been taken for the safety and protection of the workmen throughout, both in ventilation and otherwise.

NORTH SYDNEY MINING CO.

There have been no improvements worth while at this Colliery since my last report. The level has been advanced about 300 feet and the outside part of it widened and straightened in order to take the water from the travelling road. Rooms have been extended in the ordinary course of working. A furnace has been built at the top of the airway mentioned in last year's report.

BROAD COVE.

There has been this year erected a carpenter shop 30 x 25 feet, a forge 25 x 18 feet, an engine house 30 x 25 feet, and an air compressor set up 22″ x 18″ driven by a 100 horse power boiler. The level on the West side of the brook in the seven foot seam has been driven 500 feet, making a total of 900 feet from entrance. A back balance has been driven to the rise and connected to an adit-level at the mouth of which has been erected a furnace of 36 feet grate area over which a cupola is built. This furnace was not in operation during the early part of the season, but is at this date ready for use. On each side of the balance there are five rooms opened out, making ten in all. On the inside of the balance, broken off the level, are ten rooms, which are driven at an angle half across the pitch of the seam. These rooms are worked by the coal cutting machines of the Sergeant and Ingersoll type. The method of working is bord and pillar—bords 20 feet and pillars 12 feet in width. The seam dips about one foot in seven.

An angle drift from the upper level or horse road has been driven up through the measures, along which the coal is to be drawn on to a bank-head which has been erected and screens put up in order to clean the coal. A large and commodious boarding house has been erected for miners near the mine, and some cottages near the harbour. Quite a lot of work has been done at this harbour during the season. A new breakwater 350 feet, has been built on the West side of the channel, and the one on the East side has been extended 100, feet and the channel inside the breakwater has been piled in as far as the mouth of the lake.

There have been quite a number of accidents in the above named Collieries during the year. Some I regret to say fatal. All of which you are aware, as you have from time to time instructed me to investigate and inquire into their cause.

It may not be out of place for me to say, that in almost every case except one or two the cause of the accident was through neglect or carelessness on the part of the injured. One or two I will mention. One case in one of the Collieries is when the pit stopped work at dinner hour, a door keeper left his post and went a distance of 1,400 feet in order to get a ride on a full box of coal coming back, and in trying to get on was caught between the coal box and pillar causing his death. Another case is in another Colliery where a boy left his post and in trying to get on a full trip of coal wagons, coming from the deeps, he fell and the trips passed over him causing death, nothwithstanding that riding on the trip was strictly forbidden in that Colliery. In other cases where miners have been caught by falling coal, the cause was that they did not keep up the sprags although told to do so.

During the latter part of the season some prospecting has been done on the Moseley area at Cochran lake, east of Sydney. In order to prove the continuation of the seam along the crop line, two or three bore-holes were put down which proved very satisfactory, also another trial pit was sunk about four hundred feet east of the pit mentioned in your last year's report. I visited the ground and saw the place. On the surface there was about four tons of coal which had been taken out of the little shaft. It looked remarkably well for crop coal, with scarcely any sulphur showing in it. The seam showed 6 feet 1 inch in thickness from roof to floor stone. The top part is 4 feet 6 inches without a parting, then there is 1 inch thick of a clay or splint parting. Next is coal four inches, and below this is six inches of soft blue clay mixed with coal and at the bottom there is eight inches of good looking bright coal. In all probability this six inches of clay will disappear to the dip of the seam.

On my return from Broad Cove, October 19th, 1898, on the west side of Lake Ainslie, I found there a man named S. S. Creese from Pennsylvania, prospecting for oil. He gave the name of the gentlemen who had him employed as Nawen and Gaston, Roxbury, Boston. A bore-hole of four and three quarters in diameter was being put down, operated by a 15 horse power engine. Boring commenced there about the 20th of April. last and on the 19th October the hole was sunk to a depth of 2240 feet. At a depth of 1600 feet, salt water was struck and still continues to be as salty as when struck at first. A quart of it when boiled down gives three ounces of salt. He says that the sands that he has bored through look as well as the oil sands bored through by him in Pennsylvania. After boring 20 feet more, he says he will leave the present hole and go more southerly and put another where he expects to strike the oil looked for.

On the 25th day of November, 1897, I visited Gowrie, and travelled the extreme parts of the pit such as deeps, levels and headways in order to see if surveys were made before the pit was abandoned and allowed to fill with water. Also on the 12th day of February, 1898, did the same at Victoria and found that in each mine surveys had been made and marks put in at the face of the deeps, levels, headways and balances, and the same put on plans in the Dominion Coal Company's office.

I have the honor to be, your most obedient servant,

P. NEVILLE,

Deputy Inspector of Mines.

MISCELLANEOUS.

In Mr. Neville's report will be found a description of the work done last year at New Campbellton, Victoria Co., by the Messrs. Burchell; and at Mabou and Broad Cove, Inverness Co., by the Broad Cove Coal Co. and others.

Some more exploratory work is said to have been done on the new seam, referred to in my last report as having been opened in the rear of Cow Bay. Areas at Cow Bay owned by Mr. Copeland and others were purchased by the Newcastle-on-Tyne Coal Syndicate, and preparations made for sinking. The False Bay coal areas were also purchased with a view to development. Elsewhere there has been little interest shown in coal work.

At East Bay, in Cape Breton County, Mr. W. N. Young has continued developing the oil shales. Reports by experts show the products of these shales to be of very high quality. It is expected that operations will shortly be undertaken to work the deposit on a large scale.

Accidents during the Year, Ending Sept. 30th, 1898.

DATE.	MINE.	NAME.	AGE.	OCCUPATION.	REMARKS.
Nov. 10	Dominion No. 1	Robert Way	20	Driver	Leg broken by runaway wagon down the deep haulage road.
Dec. 10......	Sydney	John Boutilier	59	Miner	Fatally injured by fall of roof stone.
Dec. 10	"	John Jones	25	Miner	Slightly injured by fall of coal.
Dec. 10......	Dominion No. 1	Dan. A. McNeil....	20	Laborer	Arm broken between two coal wagons.
March 10....	Sydney	William Moncrief ..	54	Miner	Seriously injured by fall of roof stone.
March 17....	"	Thomas Toomey....	32	Miner............	Hurt by fall of roof stone.
May 17	"	William McInnis ..	35	Miner	Slightly injured by fall of coal.
June 2......	"	John Quinn...	50	Miner	Slightly injured by loose coal from

June 16.....	Dominion No. 1.	Fred. McNeil	21	Loader............	Fatally injured by fall of loose coal on him.
July 10......	"	Dan. R. McNeil	22	Loader............	Slightly burned by gas.
July 27......	"	Archy Gillis	49	Shot Firer.........	Seriously injured by shot going off while tamping.
July 27......	"	Alexander Edwards.	21	Miner............	Slightly injured by shot going off while tamping.
Aug. 29.....	Bridgeport	Eli Crowly	26	Shift Man.........	Killed by fall of roof stone.
Sept. 1......	Dominion No. 1.	Neil Campbell......	13	Doorkeeper........	Seriously injured, caught between coal box and pillar.
Sept. 2......	Sydney	Dan. McIntosh.....	13	Roller Oiler........	Killed, fell under trip whilst trying to get on for a ride.
Sept. 3......	Bridgeport. . .	Pearce Corbitt	16	Driver	Jaw bone broken by a piece of roof falling.
Sept. 28.....	Dominion No. 1	George B. Batten....	27	Loader............	Foot badly crushed by lump of coal.

Cubic Feet of Air Per Minute Circulating Through Cape Breton Collieries, Year Ending September 30th, 1898.

MINES.	Oct.	Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.
Campbellton	9800	9900	10005	......	9000	8900	......	7980	7000	7900	......	20000
Victoria	58000	59060	50000	......	40000	......	......	......	......	......	......	......
Hub	24500	24000	......	......	......	24000	21100	21000	32980	48000	40000	41200
Reserve	142500	145000	150000	90500	605000	75100	75600	149200	155000	115000	137250	137690
Caledonia	75000	87900	75000	75000	50000	67800	71000	87500	70980	58500	71110	72100
Gowrie	25000	1500	......	......	......	......	......	......	......	......	......	......
Dominion No. 1	86550	90660	80000	78100	38100	60000	60200	63050	73100	72510	60150	72500
International	87100	65840	59900	55000	35000	61900	55000	60500	63000	72110	67000	70900
Bridgeport	51200	57291	50000	40200	30500	51000	49200	75540	65500	64100	60100	65290
Sydney	76540	70209	72403	79955	87628	84391	83091	85535	92438	84098	74850	83872
North Sydney Mining Co.	4000	3200	6500	4000	5000	6500	6730	6501	5990	4000	5200	8000
Broad Cove	......	......	......	......	......	......	......	......	......	10000	......	6950

Date of Inspecting, Mining Year, Ending Sept. 30th, 1898.

MINES.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.
Campbellton	9	......	9	......	17	8	......	25	17	9	......	22
Victoria	12	30	6	......	12	......	......	......	......	......	......	......
Hub	13	15	......	......	......	15	12	5	21	22	20	9
Reserve	14	19	7	14	11	18	20	14	24	14	25	10
Caledonia	15	16	13	15	19	12	19	6	22	23	4	15
Gowrie	16	25	......	......	......	......	......	......	......	......	......	......
Dominion No. 1	18	17	18	25	5	21	14	17	16	5	24	12
International	19	29	27	24	22	19	28	23	23	6	26	14
Bridgeport	20	18	24	13	7	16	21	11	15	7	23	13
Sydney	26	27	11	21	10	2	6	20	18	16	17	17
North Sydney Mining Co.	27	27	26	22	8	3	7	21	28	15	16	16
Broad Cove	......	......	......	......	......	......	......	......	......	12	......	28

Memo. showing quantity of powder used, and No. of tons of coal produced therefrom during the year.

MINE.	Lbs of powder.	Tons of coal.
Sydney	42,609	273,903
Caledonia	40,580	258,409
International	11,236	102,386
Dominion	53,500	285,109
Bridgeport	28,575	150,210
Reserve	41,298	247,092
Hub	7,866	74,809
Campbellton	2,500	12,853
Broad Cove	1,250	9,000

GOLD.

The returns for the year ending Sept 30th show that 31,104 oz. 17 dwts. of gold were extracted, as compared with 26,963 oz. 14 dwts. 2 grains in 1897. The returns for this year are fairly up to date

The following general summary shows the yield by districts:—

GOLD—General Statement for the Year Ended Sept. 30, 1898.

DISTRICT.	Days' Labor.	Tons Crushed.	Average Yield of Gold per ton.			Total Yield of Gold.		
			Oz.	Dwts.	Gr.	Oz.	Dwts.	Gr.
Malega Barrens	....	1200	1	14	....	2040	....	...
Brookfield	16442	1112	... .	6	22	3854	18	....
Waverly	1560	807	....	12	12	504	13	11
Oldham	....	631	2	2	3	1329	9	14
Sherbrooke	45828	16891	....	6	8	5201	4	10
Caribou	14416	6188	....	3	21	1201	7	19
Lake Catcha	3908	406	....	19	12	396	16	11
Millipsigate	9934	3421	....	9	12	1631	1	....
Gold River	155	201	3	6	5	667	13	23
Kemptville	3019	228	....	9	15	109	15	5
Stormont	50374	34817	....	4	16	8386	17	2
Fifteen Mile Stream	10499	3495	....	4	19	537	....	....
Killag	....	355	1	11	8	556	8	....
Uniacke	12221	1899	....	18	17	1779	6	23
Tangier	1605	1184	1	3	15	1341	....	....
Wine Harbor	2082	687	....	3	13	113	5	17
Montague	11429	1992	....	4	8	199	8	10
Other Districts	3810	917	....	12	13	1254	10	23
Total	186812	86331	....	....	....	31104	17	...

REPORT FROM MR. D. WETHERBE.

MINES OFFICE, HALIFAX, Oct. 20th, 1898.

TO DR. GILPIN,

Deputy Commissioner and Inspector of Mines:—

SIR,—I beg to submit the following report of my visit to the Gold Mines east of Halifax:—

I visited Tangier Gold District on Aug. 2nd, 1898. This district which has practically remained idle for a number of years has again assumed an air of stir and bustle.

The Tangier Gold Mining Co., under the temporary management of Chas. McClair, is in active operation on the "Leary," "Murphy-Turin," and "Nugget" leads, and employs 52 men. On the "Leary" lead at the western end of the property two shafts are sunk, the East one down about 160 feet. The engine house situated in close proximity to the shafts contains a 30 H. P. Robb Engine which is used for hoisting and pumping. The latter is done by means of a cornish pump. The lead here is between 4 and 7 inches thick and looks extremely well.

I found the shafts to be fairly well timbered in the new workings and with platforms at the proper intervals. It would be as well to have "lagging" or a casing of some sort placed to separate the ladder way from the rest of the shaft.

There are also in operation two shafts on the Murphy-Twin leads and one on the Nugget lead at the East end of the property. The shafts on the former lead are down about 48 feet. Over 100 feet of ground has been stoped out from the West shaft. The Murphy and Nugget leads are about 4 and 3 inches wide respectively. More or less work has been done on several shafts close to above workings; but the intention now is to sink one main vertical shaft from which when cross-tunnels have been driven all the hoisting will be done. In fact this shaft has already been commenced.

At present engines are in use here for hoisting, but a large and well equipped hoisting and engine house is now in course of erection. It is situated over the mouth of the new shaft and will be fitted with a shoot and ore-bin. A trolley-way will convey the rock from here to the mill, some hundred yards to the eastward, and on lower ground.

It has been remodelled and ten additional stamps having been put in, twenty will be constantly be kept going. This mill was formerly run by water power and could be yet if more head was given, which is quite possible. A good rock-breaker is in use here.

As the workings at this end of the district can supply all the stuff necessary to feed this mill, the erection of another 20 stamp is in contemplation by the Company, probably at the West end of the property to be supplied from the Leary and other leads. Concentrators are also being talked of.

The anticlinal is well defined and several of the leads have been cut on the North dip. It curves to the northward at Strawberry Hill and the river. Faults have been located at several places.

MOOSELANDS.

Tangier District, The Arlington Gold Mining Co. I. H. Treen has been acting as manager of this property, which was recently secured by the above company from Mr. Yeadon. It was formerly known as the Sagar-Musgrave block. J. Reynolds, foreman, with 8 men employed.

At present they are working on an angular which crosses the workings on the Lake lead. The old workings on this lead were prosecuted by means of an open cut, but now a shaft on an incline to the west of about 45 degrees has been sunk on the lead which dips almost perpendicularly, and both the angular and lead are being worked, providing about 7 ″ of crushing material. Part of the ladderway should be renewed and more timbering is required. An engine is used for hoisting. The property contains an old 4 stamp mill run by an upright engine. This had been employed satisfactorily for a test lot; but was not crushing when I was there. A considerable amount of development work has been done in former years on several leads on this property, and with capital and systematic development I should say that this would be a most promising district.

MOOSE RIVER.

Caribou District, Aug. 25th, '98, Touquay Gold Mining Co., J. A. Fraser, manager. A. Jennings under foreman, 20 men employed.

Mr. Fraser had only been there about a fortnight when I visited the mine and was about to take out a test lot from the Little North lead. The shaft on this lead in which they are at present working has been extended till it is now down about 200 feet, while the other shafts on this lead are idle. A poor chance was afforded to properly see this mine as the steam was escaping from the pumps and rendered artificial light of little use. Underhand stoping is the method of working used.

ts widening badly, the hot feed pipe, in places,
ladders, which also need a thorough overhauling.
in position in the shaft, but both Mr. Fraser and
that these faults will be remedied.

Work is also being done on the Brittania lead in which a Rand drill is being employed. This is a wide belt over 7 feet in places, I believe. The mill is situated on the river and contains 15 stamps. Two frue vanners are being put in to save the concentrates.

Moose River Gold Mining Co. A. McGregor is manager for this company and has 8 men on. He is prosecuting a "wide cut" or quarry working on a belt upwards of 20′ thick. The workings are down about 60 feet and everything in the belt is being crushed

This is an extremely cheap mode of working, and this is a necessity here as the stuff crushed gives under $2.00 per ton.

A ten-stamp water-power mill is in operation.

Colonial Gold Mining Co. J. K. Pearson, as manager, has 5 or 6 men employed. They are opening a quarry working, which when prosecuted some distance further East will cut several veins which have been opened by shafts in a few places. He is crushing surface slate and all.

The striking feature of this property as yet is the mill which is just completed and has ten stamps. Ten more are shortly to be put in, and space left for about 40 more. Mr. Pearson has introduced here a unique and somewhat original system of plates and trap. The former have cross-grooves at top and bottom. They are 12 feet long, and to avoid a common fault they are set at not too steep an angle. In the trap at the bottom, the tailings are thoroughly stirred as the water enters from below. They are then to be caught and roughly concentrated by a canvass shaking table placed at the end of the sluice.

The river runs within a few feet of the mill, and two tanks are built here to keep a plentiful supply of water for the mill and boiler. These are supplied automatically from the river, and a third tank is placed up stairs in the mill.

Two engines of 75 H. P. each (built in Galt, Ont.,) are used. The mill building is flat-roofed and of two stories. It is very roomy. A comfortable company's dwelling house has also just been finished.

A certain amount of prospecting on a small scale has been going on in the district, and Wm. Reynolds has opened two very nice looking leads.

Caribou Gold District, Elk Gold Mining Co., Fred. Darragh manager, Alex. Cameron under foreman.—With the exception of a little work about the mill and the pumps being kept going, very little work was being done here, though I am told 14 men are employed.

I went all through the workings and found them to be very irregular, being broken with faults and the shaft very badly sunk. It is down about 300 feet.

of 54° for 250 feet, and then 65° to the bottom. This shaft has been enlarged to 15 × 8½ feet to allow room for two skip slides. It is also well timbered. A vein folded in anticlinal form beneath the outcrop of the anticlinal has been cut off at its apex by a cross-tunnel driven North over 90 feet from the bottom level.

This cross-tunnel was also driven South, and at a distance of 26 feet a slate-belt was encountered, well mineralized and showing free gold.

Another slate belt showing numerous sights in the working face was struck by the tunnel. This tunnel is to be extended north and south across the strata to cut other veins and belts. But by far the most important work being done is the sinking of a vertical shaft on the outcrop of the apex of the anticline.

This shaft is already down 260 feet and the intention is to sink 1000 feet and cross-cut. The shaft is divided into three compartments for cages, skip and pump and is well timbered with large squared timbers. The sinking of a shaft to this depth shows great enterprise on the part of the company, and will be watched with interest by the miners of the Province, as it will determine (in this district, at any rate) whether the lodes continue in size and value as they descend below the superficial depth to which the majority of our mines have been worked in the past.

Above ground the work has also been rapidly pushed, and already a new shaft house of ample proportions, commodious offices, engine and boiler house, machine and work shops, and the foundation of a 60 stamp mill are about completed, and the company expect to crush by the end of November. At present only 30 of the stamps are to be put in, though the beds for the others are in position.

The mill tailings and a considerable quantity of the "black rock" on the dumps at this mine contain a large proportion of sulphides of lead and iron and especially of arsenical pyrites. Galena and traces of copper are also contained in them.

To save the concentrates which run high in gold, two Frue vanners to each 5 stamp battery are to be put in or 12 vanners in all for the present as the company is only commencing with 30 stamps.

The crushing material reaches at certain points a width of 25 feet or more, but the average is much below this, say 7 feet throughout.

All the hoisting is to be done by means of the vertical shaft, and the ore being taken to the top of the shaft house and bin will be led through a shoot and rock breaker, (Blake) to the batteries situated at a convenient distance from it.

The engine room contains 2 Ingersoll air compressors which supply the 6 drills used in the mine. Three 60 H. P. Cooper boilers supply the double condensing Corliss englnes used for hoisting, etc., and the compressors.

All the minor repairs will be done in the machine and workshops at the mine. Two Cornish pumps are being worked by endless ropes, the powers being given by the river.

A 140 lamp dynamo supplies the building electric light.

The property also has on it a 20 stamp water power crusher, and a company's store is shortly to be erected containing reading rooms for the men.

GOLDENVILLE.

Blue Nose Gold Mining Co. A. G. McNaughton, manager, Gardiner McKenzie, underground foreman. Seventy men are employed in this and the New Glasgow property which are under the same management. Two shafts are being operated, one 200 feet on the South Belt and one 250 feet on the Springfield. Stoping has been done on each of these belts for several hundred feet. A crosscut was being driven at the time of my visit.

The mill has 20 stamps in a new comparatively new building and is run by a 45 h. p. engine. Two air drills are employed, and the hoisting is done by steam. The mine is well timbered, and not particularly wet. A cornish pump handles the water.

New Glasgow Co. This being under the same management, employs J. C. Mason as underground foreman. Work is being done on two leads, the "Striker" and "Canada." On the former a shaft is down 165 feet and on the Canada two shafts are sunk nearly 200 feet. The lead is about 6" in width. The timbering is fairly good in this mine with the exception of a few places where wooden wedges have been used in the headings. Three Rand air drills are in use by day and two by night. Five auxilliary cornish pumps are used in the several old shafts.

The Palmerston Gold Mining Co., G. A. Hirschfield manager.— About 25 men employed.

A small amount of work is being done on two shafts on the Palmerston lead, but the Mine seems to have been worked in a very unsystematic manner. More care should be taken with the ladderways.

Two new shafts have been opened to the Southward, one 20 feet and the other 75 feet deep. The hoisting is done by wyms. The hoisting tub in the latter shaft needs a new fastening.

Sutherland Development Co., Geo. Brackett, manager; J. H. McDonald, underground foreman; 11 men employed.—Work is now being done on the Brazen Serpent lead, which averages over 7" in thickness. The property contains a 10 stamp mill, run by a 25 h. p. engine supplied by a 30 h. p. boiler. The engine supplies power for hoisting and pumping. A Cornish pump is employed. The ladders need looking to in this Mine.

ISAAC'S HARBOR.

Hurricane Point Gold Mining Co. W. Fancy, manager; R. McCallum, underground manager. About 36 men employed working on a 6" lead, which in part of the workings is broken by a large fault which rolls and increases the size of the lead.

A 10 stamp battery with rock breaker is contained in the same building as the shaft and the 40 H. P. engine which gives power for the stamps, pump and hoisting gear. Salt water is used in the battery at this mine.

Skunk Den Mine. C. F. Andrews, manager. About 27 men employed. The main shaft is 160 feet deep. At the 40 foot level, a drift is in to the east, 93 feet from which an upraise is being driven to meet an old shaft 30 feet deep. This shaft will be used in future as the main shaft from which all the hoisting will be done. At the bottom level a drift has been stopped 125 feet east. This lead is about 6" thick. The ladders in this mine need repairing, as does also the splicing of the hoisting rope. The timbering is fair. At present a 5 stamp mill is in use run by a 14 H. P. engine. This also does the hoisting and pumping, but not at the same time. Coal is used as fuel. A new 10 stamp mill and engine house is shortly to be built.

The Griffin Gold Mining Co.'s Mine is idle, though a test lot has lately been taken out, I am told.

The Richardson Gold Mining Co., at Goldboro. A. B. Cox, manager; Wm. Welsh, under manager; 75 men employed. As is well known, this belt is being worked on the bend of the Anticlinal. Three shafts are down, one on each dip, and one on the end of the Anticlinal axis, dipping to the East.

The South shaft is 240 feet deep, the middle or East 260 feet and the shaft on the North dip is 200 feet down. The belt varies in thickness from 5 feet on the North dip to 18 feet at the bend of the Anticlinal. It has been worked for about 1500 feet in the circular form and to the depth mentioned, everything taken out being crushed.

The timbering of this Mine on the whole is bad. Formerly it was timbered with long piles, and, in fact, is yet to a large extent, though a few small pillars have been left. On the North dip in one of the upper scaffolds the timbering is extremely bad, wooden wedges being used almost exclusively at the headings, and in only a few places did I see a proper tooled heading in the hanging wall.

The same may be said of all the timbering more or less.

Several falls of rock have occurred, one very serious one at the south side of the main shaft.

I should advise large pillars being left in this mine at frequent intervals as small breaks in the walls occur at comparatively short distances apart. Steam drills are employed in the mine.

A 40 stamp mill is in operation and the Wilfley concentrator is used to save the concentrates, which were about to be subjected to a mill test at the time of my visit. A 150 H. P. engine gives power for hauling stuff to mill, crushing, rock-breaker and concentrator. Electric light is used in shaft, shaft houses and mill and in fact everything above ground is in ship-shape and satisfactory order.

COCHRAN HILL.

No mining work was being done here on account of the burning of the mill some months ago

A new 20 stamp mill is in course of erection, and Mr. H. E. Taylor, the manager, informs me that they expect to be in running order about the middle of October.

FOREST HILL.

Modstock Gold Mining Co. W. J. McIntosh, manager; F. Tunney, underground foreman, 68 men employed. Four working shafts are being worked on a 2″ lead, the deepest down 165 feet. The timbering in this mine is by far the best and most systematic I have yet seen, the headings all being properly tooled and large timbers placed. Engines are used for hoisting, and the water is handled by tubs. The power for a 10 stamp mill is given by a 30 H. P. engine. A Wilfley concentrator has been placed in the mill and good results are expected. Several other leads have been cut on this property though little development work has been done on them.

McConnell Gold Mining Co., J. McConnell manager, 22 men employed.—Working on the same 2″ lead as the Modstock Co., but farther to the Eastward. The timbering is not up to the mark in this mine. Engines are used for hoisting and the water is handled by tubs. A 10 stamp mill is in operation.

Crow Nest Mine. W. H. Weston, manager, —— Irwin, foreman, 23 men employed.—A tunnel is driven in the side of the steep bluff, easterly, to meet a shaft sunk from a level driven 62 above. The bottom level is driven 125 feet east of the shaft. Several cross-cuts and levels have been driven, making an extensive working. A trolley track has been laid through the levels, and the workings are lit by electric light.

Four drills run by compressed air are employed.

A 75 h. p. engine gives power for the 20 stamps in the new mill house and the rock breaker (Dodge).

I have the honor to be, sir, yours respectfully,

D'ARCY WEATHERBE, *C. E.*,

Mines Department.

Herewith is attached a sketch of the progress at other mines for the past year.

MONTAGU.

In this district *The Golden Group Mining Co.* A. A. Hayward, manager, D. McKaskill, undergound manager, about 30 men employed, have been doing considerable work up till the middle of the present year when they closed down their mine on the Lawson Lode and commenced to open up the Old Annand property to the eastward. A large amount was expended in putting in new plant and machinery, opening up the shaft and refitting the mill which now contains 15 stamps. This work occupied some month's and crushing was to be begun in October. The first crushing at this mine proving unsatisfactory, it was shut down.

Symond Kaye. Under the Messrs. Oland this mine has been worked in a more or less desultory fashion during the past year.

The lead which paid them so well during the last part of the previous year was lost on a fault; but has since been recovered some distance to the southward. Tributors, crushing in the Salisbury mill, have produced about 100 oz.

Oldham has produced nearly 1500 oz., chiefly by tributing, though I believe Mr. Neily is about to open up the "Bonanza" lead at once. Practically the same may be said of Waverly for the past year.

CHEZZETCOOK.

The first mention of this district appears in the Mines Report for the year 1882, when the Oxford Gold Mining Co. erected a complete milling and mining plant, with the necessary stores, dwellings, etc., and commenced mining operations. Other parties did considerable work during the same year. In the following year the same Company produced nearly 2500 oz. of gold from 1475 tons of quartz.

In 1884 the Oxford Co. had gone ahead in their development work to such an extent that they were spoken of as owning one of the best mining plants in the Province.

A 10 stamp mill was built during the year 1886 by the Cambridge Company. Work was continued by the Oxford people, who in 1886 discovered a new and very rich lead. Up to the year 1888 over 40 leads had been cut on the Oxfcrd property, and by 1891 the Company had discovered over 100 leads and done a large amount of development work. More or less work has also been done in the district by Jno. H. Anderson, Dr. Cogswell and others. Since the year ending Septemder 30th, 1895, no report has been published by the Government relating to this district, but during the present year considerable development work has been done in a new part of the district and some of the old properties having been re-opened. The prospect for the district appears to be promising.

John H. Anderson has completed a ten stamp mill and is opening up ground of promising character, and will it is expected, make steady and satisfactory returns during the approaching season. There are belts on his and other properties in this district of which are well worth testing, and may prove adapted for large and more durable enterprise than the smaller and richer deposits, hitherto forming the dependence of this gold field.

The returns from this district have not appeared in separate form in the Mines Reports for those years during which the district has been worked only to a limited extent. The total returns show that 21,140 tons of quartz have yield in round numbers 23,153 oz., 18 dwt., 7 gr. of gold, valued at about $450,000.

WESTERN COUNTIES.

The total production of the Gold Mines West of Halifax for the past year was upwards of 6350 oz., of which 3855 oz. was produced by Brookfield, 1755 oz. by Leipsigate and over 600 oz. by Gold River.

This yield appears comparatively small coming from such a large area; but when the fact is taken into consideration that the amount was practically contributed by four Mines and they, with the possible exception of Brookfield, being worked on a small scale, it is nothing to be ashamed of.

A sketch is appended of the progress made during the last financial year at Brookfield and Leipsigate.

LEIPSIGATE.

Cashon-Hines Mine, Capt. John Hines manager, 30 men employed. Considerable work seems to have been done here during the past year. The lead being worked is between 10″ and 12″ in width and rapidly curves to the Northward on this property. It is probably a "fissure" lead.

Three shafts are sunk as follows: The "Mill" shaft is at present 172 feet in depth (of which 72 feet has been sunk this year). Levels have been driven East 40 ft. and West 110 ft.

At a distance of about 700 ft. to the Southwest of the "Mill" shaft are two working shafts 65 ft. apart. (Probably on the same lead.)

No. 1 shaft is 100 feet deep and No. 2 65 ft. Drifting has been done for a distance of 130 ft. West and 193 ft. East of No. 1 shaft. At one point the width of the lead is increased by a roll to about 7 ft.

The course of the lead changes from N. 25° E. at the "Mill" shaft to N. 56° E. at No. 1 shaft.

In June last year a system of rope hoisting was put in at the Western workings. Power for this was given by the mill house engine and provides for a hoist in each shaft and a 1¼″ pump.

Owen Mine.—This Mine, just to the North of the Cashon-Hines, is supposed to be situated on the same lead. It has also been working steadily during the past year and a new, well equipped, 5 stamp mill was erected.

A feature of this district is the production of silver, which, though small, is unique.

A mining road has been built to these mines, shortening the distance from Bridgewater by several miles.

NORTH BROOKFIELD.

Brookfield Mining Co. Ltd. Wilbur L. Libbey, manager, C. W. Crowe, underground manager, 70 men employed. The mine is worked by two shaft one vertical and nearly 500 feet deep and the other about 900 feet at an inclination of 45°. Considerable development work has been done during the past year, and a modern compressed air pumping and drilling plant has been installed which has reduced the cost of mining.

An up-to-date 20 stamp mill and 8 "Triumph" concentrators handle the ore. Care is taken in the amalgamating and the tailings [illegible] [illegible] mill, and concentrators are continually followed by

The chlorination plant which is capable of handling 16 tons of concentrates in 24 hours, handles the Company's concentrates, and they are prepared to do the same for other mines in the Province at as low prices as anywhere in the world, guaranteeing them 90% of extraction.

The Company has purchased an adjoining property, and commenced work there, putting in a hoisting and drilling plant.

They have been paying more attention during the past year to development work and increasing the ore reserves than in producing large bricks.

D'ARCY WEATHERBE, *C. E.*
Mines Department.

December, 1898.

ACCIDENTS.

As far as practicable, accidents at the Gold Mines, during the past season, have been enquired into.

The following report refers to an accident at Montague, March 4th, 1898 :—

HALIFAX. N. S., March 8, 1898.

DR. E. GILPIN,
Inspector of Mines.

SIR,—Acting on your instructions I went to Montague, yesterday, (March 7th) to obtain information relating to the accident to Hugh McAskill, at the *Golden Group Mines.* The following are the condensed details :

Name..........	Hugh McAskill, Montague.
Occupation	Contractor sinking shaft.
Date and time....	March 4th, 7 o'clock in the morning.
Shaft...........	Nugget lead shaft.
Injury..........	Ankle broken and body bruised,
Cause...........	Slipped down face of sinking, 35 feet.

Account of accident · Hugh McAskill was contractor under the *Golden Group Co.*, and was sinking development work at the bottom of some old work on the Nugget lead. The old workings were 55 feet deep, and at the old level McAskill had put in a platform to protect the workmen in the sinking. The new work had reached a depth of 35 feet. On the old level there were two dams put in to hold back the water that came from east and west. A water-pipe took the water from the west tank to the east tank from where it was pumped. The men running the steam drill on Thursday evening, fired the holes they made and must have loaded heavier than usual, for the blast cut out the platform over the shaft at the old level and disconnected the water pipe between the tanks. McAskill went into the shaft in the morning to see to the work and found the nature of the damage done. He fixed the water-pipe and climbed up to examine the west dam. He jumped down off the dam forgetting at the instant that the platform was broken out. He put his arms out to check his fall. He slid down to the bottom, a distance of 35 feet, and landed on his feet, hurting both ankles, somewhat, but breaking some bones in the left ankle and turning the foot up. He managed to reach the rapper, and got the skip sent down and dragged himself into it and signalled the hoist to take him up. He had to look after himself as he had no rapper signal beyond " hoist," lower," " go slow." On account of the amount of inflammation of the ankle before the doctor came, the bones had not been set up to the time of my visit to him. Yesterday the swelling had reduced and he was feeling easier.

The shaft, ladders, safety platforms and hoisting gear at this shaft were in good order. The want of a signal for help was an oversight that should be provided for.

All of which I respectfully submit,

F. W. CHRISTIE, *C. E.*

On the 25th of July a fatal accident occurred at the Dufferin Mine, of which I have obtained the following particulars:—

At 7.45 on the evening of Monday, 25th inst., an accident occurred in the vertical shaft being sunk by the Company, whereby Edward Spencer, chucker, aged 27 years, lost his life. Spencer was acting as assistant to Sylvester Carroll, machine drillman. Carroll was slightly injured. There were four men employed in the shaft at the time and two air drills were at work. The men were drilling the holes for the next blast. Carroll had started a new hole with a four foot drill. It had only gone a few inches when an explosion took place in the rock which they were drilling, with the result stated above.

Immediately after the occurrence of the accident an examination was made of the place. It seemed that in the blast which had been fired on the night shift of Saturday a small piece of dynamite had remained unexploded in the bottom of the hole, and Carroll, in starting a hole near the same place, had drilled into the old one thus causing the explosion.

The Coroner, Dr. McMillan, of Sheet Harbor, held an inquest on Tuesday, at which the jury brought in a verdict that the deceased met his death by the accidental explosion of dynamite, and that no blame could be attached to the management or anyone.

On the 12th September an accident of a similar character occurred at Malaga Mines, on the Parker-Douglas property, by which Robert Devaney and Clarence Boyer were instantly killed. The men were employed on the Parker and Douglas property. They, with two other miners, were at work in the bottom of a shaft 120 ft. from the deck; it was the pump shaft, twelve feet long, and eight feet below the other work. Each pair of men kept their own end of the shaft. On Saturday they had fired five shots in all when they quit work. On Monday morning they hoisted the loose rock from the blasts. The other pair of men got to work first with the drill. They were backs towards the men who were killed, who had struck but a few blows when the explosion occurred. The fact is, that a portion of a charge of Saturday night remained unexploded, and this fact was unknown to the men. It is most probable that they went to work in the old drill hole, filled with bits of rock, and set off the dynamite by a blow from the drill; either that or they began work near enough to explode it. Some things are always taken for granted, and one of them is, that all the dynamite explodes if any does. This is the rule, and exceptions are too rare to be acted upon.

Mr. Devaney was in charge; he was a careful man, and during a year, in which for much of the time there had been more than fifty men at work, no accident had occurred. Mr. Boyer was a good miner, and not at all reckless. They were men of excellent qualities.

Another accident occurred at Montagu by which James Mitchell lost his life. He was 20 years old and unmarried.

The inquest was held before a representative of the department could attend. From what could be learned it seems the accident took place at 6.20 a. m.

Mitchell, who was on the deck-head, attempted to loosen the rope, which had caught in some way at the bottom of the shaft. The rope parted at the drum, and Mitchell fell 85 feet to the bottom. Some 25 minutes passed before ladders could be procured and he was then found to be under 9 feet of water.

It is doubtful whether death was due to drowning or injuries sustained by falling down the shaft. This accident occurred on the " Iron " lead, which was being worked on tribute by Ruben Holly.

MISCELLANEOUS.

Lead Ore.—The operations of the Cheticamp Gold Mining Co., the past season, have only been of a preliminary character. On the Galena deposit a shaft 16 feet wide, 30 feet across the strata, and 50 feet on the dip, has been sunk, showing ore over the entire walls. Some 200 feet east a second shaft 14 feet wide, 7 feet across the strata, and 45 feet on the dip has been opened up in a large deposit of Zinc Blende, both openings look very promising indeed.

Since May 1st, 1898, when operations were commenced, this company has constructed a road two and a half miles in length, through exceptionally rough country. It has erected a concentrating mill 65 feet in length, by 51 feet in width, two stories high, with an attached power building, 38 feet by 18 feet, which contains a water wheel capable of developing 125 horse power. The mill proper contains aBlake Ore Breaker, two sets of Cornish Rolls, two Elevators, two Trommels, 6 jigs, each of four compartments, and a Rotary Table.

The river from which the power is obtained has been dammed a half mile up stream above the concentrator, and a wood flume 2,600 feet in length, built to convey the required amount of water to a point on the mountain side above the mill, where an iron flume 29 inches diameter, and 190 feet in length, connects to supply the power.

The erection of the concentrating machinery was completed the last week in November, when 50 tons of ore were put through, yielding 10,713 lbs., of concentrates. Upon assaying these they were found to contain lead 25.3%, silver 22 oz., and gold 3 dwt. per ton of 2,000 lbs.

Copper.—There is nothing new to report about the Cape Breton Copper deposits. In Cumberland County some work has been carried on during the summer, and the following notes are from visits paid by Mr. Blue to the different deposits.

On the 25th November, I visited the mine of the Crown Copper Company near Ogilvie's Mills, about 5 miles north of Wentworth Station, I. C. R. A shaft has been sunk to a depth of 50 feet near the edge of a branch of the Wallace River. Some good ore was taken from this shaft, but during my visit, and for some weeks previous, operations were suspended.

CHISHOLM MINE.

The Chisholm mine is situated about 4 miles north of the Crown Company's mine. It is also on the bank of the Wallace River; Mr. C. Holden, manager. A tunnel has been driven in 100 feet from the bank, and 300 feet south of tunnel a shaft has been sunk 60 feet, and a place driven up 85 feet to the rise. A 15 H. P. boiler, hoisting engine and pump have been erected, and the entire plant covered with buildings. The ore in this mine is of superior quality, and is found in a vein of blue clay, about 5 feet thick, which has an easy angle dipping to the south. In the mining the clay is quite hard, of a slaty nature, but after being exposed to the weather a short time, it readily dissolves and copper can be traced all through it.

Work at this mine is at a standstill at present, but the company keep the water pumped out.

PALMER MINE.

The "Palmer Mine" is situated 4 miles southwest of the Chisholm mine and on the West Branch of the Wallace River; Frederick Huestis, manager, and G. M. Spencer, underground manager, 7 men employed working double shift. A breakwater 70 feet long has been built, and the slope extended in the bank of the river 100 feet, dipping to the north. In a vein of blue clay 7 feet thick, copper is found all through the clay, but it is especially rich near the bottom of the vein.

The Chisholm and Palmer Mines are both owned by the same Co. of New York capitalists.

I have no information as to their future intentions, as the promoters are at present away from the Mines.

Oil.—In Mr. Neville's report will be found a reference to the progress made in boring for oil at Lake Ainslie.

Plaster.— The Quarries continued working as usual. The Victoria Gypsum Co. are preparing to open a large deposit on St. Ann's Harbor.

Tungsten.—Some interest was aroused by a statement that near Lake Ainslie a vein had been opened carrying Tungstate of Iron in workable quantities. The vein is stated to be about three feet thick and to yield readily a concentrate carrying over 65 per cent. Tungsten Trioxide. It is stated that 65 per cent. ore is worth, on the continent, £80 per ton.

The demand for tungsten is not large, though it is gradually increasing. It is used as an alloy in making steel, and this is the only use of commercial importance. The supplies at present are hardly equal to the demand. The principal ores of tungsten are the mineral wolframite (Fe Mn WO_3) and scheelite ($CaWO_4$), of which the former is the more abundant. Wolframite is a black mineral of 7.1 to 7.55 sp. gr., and 5 to 5.5 in the scale of hardness. Sometimes it is weakly magnetic. Scheelite, on the other hand, is a light-colored mineral of vitreous lustre and white streak. Its color may be white, yellowish-white, pale yellow, brownish, and sometimes orange-yellow. Its hardness is 4.5 to 5, and specific gravity 5.9 to 6.076. Scheelite contains 80.6 per cent. tungsten trioxide against 76.47 per cent. in wolframite.

Iron.—During the past year the Londonderry Iron Company did not mine any ore, or have a furnace in blast. The foundry was kept employed, and several thousand tons of castings turned out. About eight hundred tons of ore were sold to the Nova Scotia Steel Company.

At Bridgeville, Pictou County, the returns of the Nova Scotia Steel Company show that about 19,000 tons of ore were mined. The following memo. shows the work performed during the summer at the mine of the Charcoal-Iron Company.

BRIDGEVILLE IRON MINE.

A. S. Stevens is underground manager, and W. B. Moore, general manager at this mine.

A place was started on the south level and driven to the deep for a distance of 40 feet, then north 25 feet. From this point a place was driven back up the hill to the level for an air return. Owing to the rapid accumulation of water, this work has been abandoned. There is plenty of ore on the north side to supply the present demands. A level is being driven on the north side to connect with the old Brook tunnel. When this is completed it will improve the air. A place has also been driven on this side to the dip, a distance of 70 feet, where a place has been turned south which will connect with the one on the south side already mentioned as standing idle. This vein of ore is 16 feet thick, and is taken out by means of a tailrope from the slope engine. There are at present 38 men employed in and around this mine. It is well timbered and in good condition.

The Company produced about 11,250 tons of washed ore. There were thirty miners and fifteen laborers employed below ground and four skilled workmen and four laborers. The number of days worked underground was 10,804 and above ground 1,450. The Company disposed of all the pig iron now in stock and leased their furnace plant to the Mineral Products Co., of New York, for the purpose of making Ferro-Manganese. Manganese briquettes are made at Hillsboro, New Brunswick, from a deposit of bog ore, and shipped to this furnace. There are now about 2,000 tons of briquettes in stock at the furnace and about 75,000 bushels of charcoal. The stack has been relined and is expected to go into blast the first of the year. A stock-house for charcoal was built, 80 by 40 feet, and a new pump, 12 x 7 x 12 inches, was placed in the Mine. The only accident during the year occurred to A. F. Grant, foreman. A new rope, with socket, had been ordered and put on the slope. On shoving over the empty box the rope pulled out of the socket, and the box running down the slope overturned a full box, which broke Grant's leg. About 10,000 tons of washed ore were sold to the Nova Scotia Steel Company, and ran from 47 to 49 per cent. of metallic iron.

Steel.—The Nova Scotia Steel Company imported in addition about 30,000 ton of ore from their Newfoundland mine.

In Cape Breton additional prospecting on the Iron ores at Indian Mountain, Whycocomagh, have shown deposits of workable size, and below the Bessemer phosphorous limit. In the neighborhood of George's River, in Cape Breton County, large tracts of country have been applied for, said to contain extensive deposits of magnetite and hematite. Other discoveries are reported from Mira and Louisburg. The attention being paid to Iron ore in Cape Breton at present is presumably due to the reported starting of a large blast furnace plant at Louisburg.

Manganese.—Little work was done at the older mines. Mr. Miner T. Foster, of Halifax, opened a vein of manganese ore near New Germany, Lunenburg County, from which a trial cargo of 50 tons has been shipped to New York. The ore is of good quality, and the deposits are believed to be extensive.

I have the honor to remain,

Your obedient servant,

E. GILPIN, JR.

TABLES.

TABLES.

LIST OF MINERAL LEASES (OTHER THAN GOLD.)

IRON.

No. of Lease.	Name of Owner.	County.	Agent or Manager.	Address.	No of Sq. Miles.
[illegible], 93	Moseley, E. T	Cape Breton			2
145	McLean, Jno	"			1
91, 232	Brookman, P	"			2
92	Matheson, D	"			1
102	Smith, W	"			1
103	McKenzie, H. R	"			1
104	McKenzie, J. W	"			1
43, 44, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59	Bartlett, J. H	Pictou			15
60, 68, 70, 71	Nova Scotia Steel Co	"			4
61, 67	Cameron, J. A	"			2
1	McIntosh, J. C	Hants			1
2	McDonald, L	Antigonish			1
5	McDougald, J	"			1
10	Fraser, W. J	Inverness			1
1, 2, 83	Nova Scotia Steel Co	Guysboro			2
82	McMillan, J. R	Pictou			1
191, 197	McKean, Jno	Cape Breton			2
2	Miller, J. C	Halifax			1
238	Matheson, A	Cape Breton			1
					43

23/53	Binney, J. W.	"			1
24/47, 25/49	Boston Coal Mining Co.	"			2
57	Salt Springs Coal Co.	"			1
93	Wallace, H. N.	"			1
26/16	Minudie M. & T. Co	"			1
58, 59, 60, 61	Tupper, C. H.	"			4
63, 93, 105	Leckie, R. G.	"			3
65	Annand, C	"			1
66, 67, 68, 69, 127, 128, 129	Cowans, J. R.	"			7
80	Gue, T. R.	"			1
86	Rutherford, J	"			1
91	Fraser, H. R.	"			1
89, 131	Hickman, J. S.	"			2
94, 107	Weatherbe, U. J.	"			2
94	Hayward, A. A	"			1
106	Vroom, W. E	"			1
107	Fitzsimmons, R	"			1
125	Franklyn, Geo. E.	"			1
21	Drury, H. A.	"			1
					104
13/79, 1/27, 2, 3, 28, 29, 30	General Mining Association	Cape Breton.	R. H. Brown.	Sydney Mines	23
173, 58/67	Weatherbe, R. L.	"			2
42/52, 49/53	McLeod, Hugh.	"			2
			Carried	*forward*	27

LIST OF MINERAL LEASES (OTHER THAN GOLD.)—*Continued.*

COAL.

No. of Lease.	Name of Owner.	County.	Agent or Manager.	Address.	No of Sq. Miles.
				Br't forward.	25
8/6	Nova Scotia Steel Co	Pictou			1
10/24	Richey, M. H	"			1
11/11, 45, 9/10	Gray, B. G.	"			4
66/46	Fergie, C.	"			1
46, 83, 70, 68	Nova Scotia Steel Co	"			4
76	Murray, S.	"			1
					36
56, 22/51, 74, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 14	Canada Coals & R'y Co.	Cumberland			15
19/44, 55, $\frac{16}{6}$, $\frac{17}{7}$, $\frac{18}{8}$, $\frac{20}{52}$, $\frac{21}{55}$ 61, 62, 70, 71, 72, 73, 75, 76, 77, 78, 79, 81, 82, 83, 84, 85, 87, 88, 90, 177, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124	Cumberland Rail'y & Coal Co.	"	J. R. Cowans.	Springhill.	49
8/5	Lawson Mining Co	"			1
6/12	Londonderry Iron Co.	"			1
15	Prospect Mining Co.	"			
9/22, $\frac{10}{23}$, $\frac{11}{28}$, $\frac{12}{29}$, $\frac{13}{30}$	Styles Mining Co.	"			5

23/53	Binney, J. W	"			1
24/47, 25/49	Boston Coal Mining Co	"			2
57	Salt Springs Coal Co.	"			1
93	Wallace, H. N.	"			1
26/16	Minudie M. & T. Co	"			1
58, 59, 60, 61	Tupper, C. H	"			4
63, 93, 105	Leckie, R. G.	"			3
65	Annand, C	"			1
66, 67, 68, 69, 127, 128, 129	Cowans, J. R.	"			7
80	Gue, T. R.	"			1
86	Rutherford, J	"			1
91	Fraser, H. R.	"			1
89, 131	Hickman, J. S.	"			2
94, 107	Weatherbe, U. J.	"			2
94	Hayward, A. A	"			1
106	Vroom, W. E	"			1
107	Fitzsimmons, R	"			1
125	Franklyn, Geo. E.	"			1
21	Drury, H. A.	"			1
					104
13/79, 1/27, 2, 3, 28, 29, 30	General Mining Association	Cape Breton.	R. H. Brown.	Sydney Mines	23
173, 58/67	Weatherbe, R. L.	"			2
42/52, 49/53	McLeod, Hugh.	"			2
			Carried	*forward*	27

LIST OF MINERAL LEASES (OTHER THAN GOLD.)—*Continued.*

COAL.—(*Continued.*)

No. of Lease.	Name of Owner.	County.	Agent or Manager.	Address.	No of Sq. Miles.
				Br't forward.	27
207, 45/5, 46/28, 47/29, 50/40, 51/41, 52/42, 60/54, 61/55, 62/56, 63/57, 64/58, 65/59, 66/60, 67/61, 68/62, 69/63, 108, 109, 110, 125, 137, 162, 188, 207, 140, etc	Dominion Coal Co.	Cape Breton	H. Donkin	Glace Bay	94
117	Hamilton, A. G	"			1
142	LeCras, Henry	"			1
220, 214	Cayley, H. St. Q.	"			2
116, 164	N. S. M. & T. Co.	"			3
179, 180, 168, 190, 208, 223	Roberts, F	"			6
112, 113, 114, 115, 118, 42	Cowans, R	"			6
130	Fairbanks, E. C.	"			1
212, 131, 219, 128, 129, 134, 135, 136, 139, 144	Moseley, E. T.	"			10
138, 149, 184, 203, 224, 235	White, A. J	"			6
141, 177, 140, 213	Cumberland Ry. & Coal Co.	"			4
146, 193, 194, 216	Newcastle Coal Syndicate	"			4
159, 160	Morrison, A. G.	"			2
166	Dunn, J.	"			1

161, 222, 237	Routledge, T.	"			3
169, 170, 183	McVey, Jas.	"			3
178	Routledge, E.	"			1
165	Stephens, L. H	"			1
163, 185	Hamilton, C. F.	"			2
199, 176	Copeland, J. D.	"			4
171, 174, 212	Gorham, J. W.	"			3
181, 211, 233, 236	Burchell, J. E.	"			4
215	McKinnon, D. L	"			1
234	Ross, H.	"			1
209, 206, 186, 187, 202, 205, 206, 209	Kennelly, D. J.	"			1
210	Harold, T. C.	"			1
196	Routledge, T.	"			1
201, 221	Hickey, C.	"			2
204	Morrison, M.	"			1
0	McCuish, A.	"			1
192	McKenzie, J. A.	"			1
198	McKenzie, Jas. A.	"			1
175	McDonald, J. W	"			1
182, 200, 225	Cossitt, G. G.	"			3
167	Murray, J.	"			1
189	Morrison, J	"			1
191	Tremaine, L. E.	"			1
197	McVicar, J	"			1
229	Matheson, D.	"			1
0	Ross, H.	"			1
218	Morrison, D.	"			1
			Carried	*forward*	

LIST OF MINING LEASES (OTHER THAN GOLD.)—(*Continued.*)

IRON—(*Continued.*)

No. of Lease.	Name of Owner.	County.	Agent or Manager.	Address.	No of Sq. Miles.
				Br't. forward..	
219	Way, H.	Cape Breton...			1
226	Stephen, A	"			1
227	Johnson, J. A	"			1
228	McKenzie, J. A	"			1
231	Owen, J. M	"			1
1/2	Burchell Bros.	Victoria	J. T. Burchell.	N. Campbl't'n	3
1/13	McGregor, J. D	Inverness....			3
2/6	Ross, H. E	"			1
6/4, 7/10	Shannon, S. L.	"			1
8, 9, 10	Fraser, J. W.	"			3
11	Dawson, G	"			1
19, 20	Smythe, J. J.	"			2
12, 13, 14, 15	Broad Cove Coal Co	"	W. P. Hussey.	Broad Cove..	4
26	McKenzie, J. W	"	"	"	1
18, 16	Drummond, R.	"	"	"	2
40, 41	Cowie, A. J	"	"	"	2

0	McNab, W	"	"	"	1
24	Hussey, W. P	"	"	"	1
23, 25, 28	McColl, J.	"	"	"	3
27, 3/11	Boston & N. S. Coal Co.	"	"	"	2
31	Tupper, M	"	"	"	1
29, 30	Tremaine, E. D	"	"	"	2
35, 38, 39, 0, 0	Ross, W	"	"	"	5
32, 33, 34, 42	Wallace, W. V.	"	"	"	4
43, 44	Farquhar, J. A.	"	"	"	2
					44
1, 7, 8	Terminal, City Co	Richmond	"	"	3
2	Columbia Coal Co	"	"	"	1
3	Reynolds, W. K	"	"	"	1
5	Chisholm, W	"	"	"	1
4, 6, 9	Lennoxville T. & C. Co.	"	"	"	3
0	Catherine, Jos.	"	"	"	1
11	Cape Breton Copper Co.	"	"	"	1
					11

COAL—SALES.

NAMES.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	Year 1898.	Year 1897.
NOVA SCOTIA:						
Land Sales...	93,337	76,045	82,317	78,522	330,221	324,608
Sea Borne...	123,452	41,661	64,645	107,273	337,031	316,700
Total N. S..	216,789	117,706	146,962	185,795	667,252	641,308
New Brunswick ..	74,490	65,697	60,336	66,266	266,789	242,043
Newfoundland....	47,870	12,752	8,447	24,172	93,241	75,990
P. E. Island......	22,568	54	16,776	22,653	62,051	62,032
Quebec	151,205	10,517	295,012	487,426	944,160	875,874
West Indies	....	....	....	....	....	9,356
United States	17,329	18,861	32,992	28,845	98,027	106,279
Other Countries...	....	102	2,968	807	3,877	538
Total	530,251	225,689	653,493	815,964	2,135,397	2,013,421

COAL—GENERAL STATEMENT.

1898.	Produce.	Sales.	Colliery Consumption.
1st Quarter........................	577,643	530,251	49,699
2nd "	296,625	225,689	45,539
2rd "	596,542	563,493	37,574
4th "	810,644	815,964	37,203
Total............	2,281,454	2,135,397	170,015

COAL PRODUCE OF NOVA SCOTIA FOR YEAR ENDED SEPTEMBER 30, 1898.

COLLIERY.	Produce.	SOLD.		Total Sold.	COLLIERY CONSUMPTION.	
		Round.	Slack.		Engines	Workmen.
Joggins	70,521	58,090	6,023	6,413	4,269	1,629
Scotia	485	285	80	365	....	70
Springhill	338,934	160,767	127,025	287,792	22,349	5,852
Acadia	198,939	110,806	62,361	173,167	25,899	4,704
Intercolonial	222,386	132,481	75,767	208,248	11,523	3,850
Dominion	1,155,311	914,183	225,730	1,139,913	42,397	17,529
Sydney Mines	273,904	197,803	45,835	243,638	14,875	12,181
North Syndey	7,186	5,845	1,200	7,045	65	130
Mabou	325	315	....	315	....	....
New Campbelltown	8,441	5,993	....	5,993	1,580	405
Broad Cove	5,022	4,663	145	4,808	618	90
	2,281,454	1,591,231	544,166	2.135,397	123,575	46,440

Statement of number and classes of men employed at each Coal Mine, during the Year ended Sept. 30, 1898.

COLLIERY.	UNDERGROUND.				ABOVE GROUND.				CONSTRUCTION.				TOTAL.		HORSES.		Pits worked.
	Skilled Labor.	Labo'rs.	Boys.	Days' Labor.	Skilled Labor.	Labo'rs.	Boys.	Days' Labor.	Skilled Labor.	Labo'rs.	Boys.	Days' Labor.	Persons.	Days' Labor.	Above.	Below	Days App.
Joggins	92	61	30	41,458	5	52	11	15,763	2	..	..	381	253	57,602	5	7	256
Jubilee	3	....	....	653	1	1	....	385	1	..	.	134	6	1,172	1	....	61
Springhill	302	251	65	146,650	76	103	27	54,646	4	.	..	1,200	855	202,496	11	11	244
Acadia	250	293	64	108,344	61	116	34	55,459	....	..	.	......	728	163,803	18	20	197
Intercolonial	182	126	81	98,347	48	87	28	46,004	14	23	2	5,870	591	150,221	9	15	272
Ritchie	1	....	....	180	1	....	....	30	....	.	.	......	2	210	1	....	....
Dominion Coal Co	519	330	111	318,431	83	147	26	108,562	....	.	..	......	1116	426,993	30	94	164
Sydney Mines	410	60	111	155,538	86	105	40	64,518	10	4	1	4,255	827	224,311	11	65	289
North Sydney	11	3	....	3,532	3	2	....	1,204	1	2	.	198	22	4,934	1	....	222
Mabou	2	2	...	520	....	....	....	......	....		..	.....	4	520	....	....	60
New Campbelton	20	7	1	6,238	2	4	....	21,98	...	..	..	......	34	8,436	....	....	154
Broad Cove	10	5	1	4,247	1	0	0	192	32	..	..	7,671	49	12,110	1	1	295
	1,802	1,048	464	884,138	367	644	166	348,961	64	29	3	19,709	4487	1,252,808	88	213	

TABLE A.—COAL TRADE BY COUNTIES FOR THE YEAR ENDED SEPTEMBER 30TH, 1898.

	CUMBERLAND.		PICTOU.		CAPE BRETON.		OTHER COUNTIES.		TOTAL.	
	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.
1st Quarter........	103,307	81,640	130,518	116,012	343,666	332,581	152	18	577,643	530,251
2nd "	113,412	90,659	67,447	58,077	114,426	76,303	1,340	650	296,625	225,689
3rd "	105,912	97,395	105,661	88,215	380,678	374,142	4,291	3,741	596,542	563,493
4th "	87,309	82,576	117 699	119,111	597,631	607,570	8,005	6,707	810,644	815,964
Total........	4,09,940	352,270	421,325	381,415	1,436,401	1,390,596	13,788	11,116	2,281,454	2,135,397

PRODUCTION BY DISTRICTS FROM 1862 TO 1898.

DISTRICT	Tons Crushed.	Total Yield of Gold.			Average yield per ton.			Value @ $19 per Oz.
		Oz.	Dwts.	Gr.	Oz.	Dwts.	grs.	
Caribou & Moose River.	103036	39226	6	15	0	7	14	$ 745300
Montagu	23688	39148	12	13	1	13	1	743824
Oldham	45731	50310	......	10	1	2	0	955890
Renfrew	48142	33869	8	2	0	14	1	643519
Sherbrooke	190021	128525	2	18	0	13	12	2441977
Stormont	115138	50700	16	15	0	8	19	963316
Tangier	43845	21533	17	10	0	9	19	409144
Uniacke	52555	37462	19	7	0	14	6	711797
Waverly	122347	61351	14	13	0	10	0	1165669
Salmon River	95601	39373	7	18	0	7	4	748094
Brookfield	25472	15389	3	4	0	12	1	292394
Whitburn	6348	9535	15	18	1	10	1	181180
Lake Cacha	21140	23153	18	7	1	1	21	439925
Rawdon	12158	9592	7	4	0	15	20	182255
Wine Harbor	43348	23253	14	2	0	13	11	555821
Fifteen Mile Stream	31233	15883	3	5	0	10	4	301780
Malaga	19767	17220	5	8	0	17	10	327185
Other Districts	63439	44921	18	13	0	14	3	853517
Total	1063008	666452	11	19	..	.	.	$1266258 87

TABLE A.—COAL TRADE BY COUNTIES FOR THE YEAR ENDED SEPTEMBER 30TH, 1898.

	CUMBERLAND.		PICTOU.		CAPE BRETON.		OTHER COUNTIES.		TOTAL.	
	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.
1st Quarter........	103,307	81,640	130,518	116,012	343,666	332,581	152	18	577,643	530,251
2nd "	113,412	90,659	67,447	58,077	114,426	76,303	1,340	650	296,625	225,689
3rd "	105,912	97,395	105,661	88,215	380,678	374,142	4,291	3,741	596,542	563,493
4th "	87.309	82,576	117 699	119,111	597,631	607,570	8,005	6,707	810,644	815,964
Total........	4,09,940	352,270	421,325	381,415	1,436,401	1.390,596	13,788	11,116	2,281,454	2,135,397

TABLE B.—COAL TRADE BY COUNTIES FOR THE YEAR ENDED SEPTEMBER 30TH, 1898.

	CUMBERLAND.		PICTOU.		CAPE BRETON.		OTHER COUNTIES.		TOTAL.		Grand Total.
	Round.	Slack.	Round.	Slack.	Round.	Slack.	Round	Slack.	Round.	Slack.	
NOVA SCOTIA:											
By Land	42,469	60,936	109,873	86,005	18,104	10,477	2,357	....	172,803	157,418	
By Sea	40	10	32,165	3,095	211,845	87,064	2,747	65	246,797	90,234	
Total N. S.	42,509	60,946	142,038	89,100	229,949	97,541	5,104	65	419,600	247,652	
New Brunswick	156,359	43,674	18,552	2,705	29,966	15,186	347	....	205,224	61,565	
Newfoundland	......	......	78	......	88,904	3,269	990	....	89,972	3,269	
P. E. Island	......	......	13,428	18,407	8,941	18,066	3,129	80	25,498	36,553	
Quebec	20,054	3,293	68,885	27,916	745,018	77,593	1,401	....	835,358	108,802	
W. Indies	......	......	......	......	....	......	....	....	....	......	
United States	220	25,215	204	......	12,532	59,856	....	....	12,956	85,071	
Other Countries	......	......	102	......	2,521	1,254	....	....	2,623	1,254	
Total	219,142	133,128	243,287	138,128	1,117,831	272,765	10,971	145	1,591,231	544 166	

Nova Scotia Coal Sales, 1785 to 1898, (Inclusive.)

Year.	Sales.	Total.	Year.	Sales.	Total.
1785	1,668		1841	148,298	Forw'd 1,208,150
1786	2,000		1842	129,708	
1787	10,681		1843	105,161	
1788			1844	108,482	
1789			1845	150.674	
1790		14,439	1846	147,506	
1791	2,670		1847	201,650	
1792	2,143		1848	187,643	
1793	1,926		1849	174,592	
1794	4,405		1850	180,084	1,533,798
1795	5,320		1851	153,499	
1796	5,249		1852	188,076	
1797	6,039		1853	217,416	
1798	5,948		1854	234,812	
1799	8,947		1855	238,215	
1800	8,401	51,048	1856	253,492	
1801	5,775		1857	294,198	
1802	7,769		1858	226,725	
1803	6,601		1859	270,293	
1804	5,976		1860	322,593	2,399,319
1805	10,130		1861	326,429	
1806	4,938		1862	395,637	
1807	5,119		1863	429,351	
1808	6,616		1864	576,935	
1809	8,919		1865	635,586	
1810	8,609	70.442	1866	558,520	
1811	8,516		1867	471,185	
1812	9,570		1868	453,624	
1813	9,744		1869	511,795	
1814	9,866		1870	568,277	4,927,339
1815	9,336		1871	596,418	
1816	8,619		1872	785,914	
1817	9,284		1873	811,106	
1818	7,920		1874	749,127	
1819	8,692		1875	706,795	
1820	9.980	91,527	1876	634,207	
1821	11,388		1877	697,665	
1822	7,512		1878	693,511	
1823	27,000		1879	688,628	
1824			1880	954,659	7,317,430
1825			1881	1,035,014	
1826	12,600		1882	1,250,179	
1827	12,149		1883	1,297,523	
1828	20,967		1884	1,261,650	
1829	21,935		1885	1,254,510	
1830	27,269	140,820	1886	1,373,666	
1831	37,170		1887	1,519.684	
1832	50,369		1888	1,576.692	
1833	64,743		1889	1,755,107	
1834	50,813		1890	1,786,111	13,910,136
1835	56,434		1891	1,849 945	1 849,945
1836	107,593		1892	1,752,934	1,752,934
1837	118,942		*1893	1,485,924	1,485,924
1838	106,730		†1894	2,019,742	2,019,742
1839	145,962		1895	1,831,357	1,831,357
1840	101.198	839,954	1896	2,047,133	2,047,133
			1897	2,013,421	2,013,421
			1898	2,135,397	2,135,397
				Total...........	46,432,025

SUMMARY.

1785 to 1790	14,319	1841 to 1850	1,533,798
1791 to 1800	51,048	1851 to 1860	2,399,319
1801 to 1810	70,452	1861 to 1870	4,927,339
1811 to 1820	91,527	1871 to 1880	7,317,430
1821 to 1830	140,820	1881 to 1890	13,910,136
1831 to 1840	839,954		

*Nine months only. Fiscal year begins Oct. 1, and ends Sept. 30. (Cap. 4, Acts 1893.)

GOLD.

GENERAL ANNUAL STATEMENT.

YEAR.	Total Ounces of Gold Extracted.			Stuff Crushed.	Total Days' Labor.
	Oz.	Dwts.	Grs.		
1862	7275	0	0	6473	156,000
1863	14001	14	17	17002	273,264
1864	20022	18	13	21434	252,720
1865	25454	4	8	24423	212,966
1866	25204	13	2	32162	211,796
1867	27314	11	11	31386	218 894
1868	20541	6	10	32262	241,462
1869	17868	0	19	35147	210,938
1870	19866	5	5	30829	173,680
1871	19227	7	4	30791	162,922
1872	13094	17	6	17093	112,476
1873	11852	7	19	17708	93,570
1874	9140	13	9	13844	77,246
1875	11208	14	19	14810	91,698
1876	12038	13	18	15490	111,304
1877	16882	6	1	17369	123,565
1878	12577	1	22	17990	110,422
1879	13801	8	10	15936	92,002
1880	13234	0	4	14037	103,826
1881	10756	13	2	15556	126,308
1882	14107	3	20	12081	106,884
1883	15446	9	23	25954	97,733
1884	16059	18	17	25147	118,087
1885	22202	12	20	28890	157,421
1886	23362	5	13	29010	128,880
1887	21211	17	18	22280	173 448
1888	22407	3	10	36178	163,772
1889	26155	6	13	39160	211,548
1890	24358	9	9	42749	160,164
1891	23391	..	..	35212	149 381
1892	21080	3	18	33633	120,761
1893*	14030	5	7	28040	97,471
1894	14980	7	13	39333	139,140
1895	22112	17	21	58082	159,564
1896	25596	14	6	65873	180,519
1897	26579	19	21	76559	207,255
1898	31104	17	..	86331	186,182
Total.	685551	5	14	1116254	5,715,239

* Nine months only.

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.

MONTH.	Malaga Barrens.							Other Districts.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwt.	Gr.					Oz.	Dwt.	Gr.
October	1	....	....	147	289	..	..	5	1181	47	....	....	..	..
November	1	....	....	123	320	..	..	5	1100	44	....	....	..	..
December	1	....	....	185	288	..	..	5	1029	41	....	....	..	.
January	1	....	....	190	307	..	..	5	....	....	412	173	3	..
February	1	....	....	108	188	..	..	5	....	....	....	....	..	..
March	1	....	....	155	256	..	..	5	....	....	2	1	14	..
April	1	....	....	116	180	..	..	5	....	....	....	....	..	..
May	1	....	....	176	212	..	..	5	....	....	3	3	10	10
June	1	....	....	....	....	..	..	5	....	....	....	....	..	..
July	1	....	....	....	....	..	..	1	....	....	500	21	1	..
August	1	....	....	....	....	..	..	1	....	....	....	....	..	..
September	1	....	....	....	....	..	..	1	....	....	....	....	..	..
Total	....	....	....	1200	2040	..	..	....	3310	....	917	199	8	10

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	GOLD RIVER.							KEMPTVILLE.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwt.	Gr.					Oz.	Dwt.	Gr.
October	2	48	1	2	..	1	15	....	91	3	......	..	..	..
November	2	75	3	11	78	3	19	....	449	17	......	..	..	..
December	2	32	1	7	51	15	..	1	603	24	120	56	3	5
January	2	......	....	6	61	7	..	1	462	18	45	17	2	.
February	2	......	....	16	47	6	12	1	182	7	15	16	..	..
March	2	......	....	28	6	19	6	....	176	7	......	..	..	..
April	2	......	....	16	157	4	7	....	175	7	......	..	..	..
May	2	......	....	16	125	6	12	1	182	7	8	4	..	..
June	2	......	....	2	...	10	14	....	189	7	......	..	..	..
July	2	......	....	38	102	15	..	1	182	7	24	14	10	..
August	2	......	....	59	36	4	10	1	180	7	16	2	..	..
September								...	178	7	......	..	..	..
Total	....	185	....	201	667	13	23	....	3049	....	228	109	15	5

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	Millipsigate.							Lake Catcha.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwt.	Gr.					Oz.	Dwts.	Gr.
October	2	388	15	108	89	10	..	....	382	15	......	..	..	..
November	2	424	16	259	204	10	..	1	408	19	......	..	..	..
December	2	500	20	196	125	10	..	....	389	15	70	85	5	..
January	2	901	36	394	252	10	..	....	180	7	......	..	..	..
February	2	776	31	200	75	10	..	....	150	6	17	33	7	4
March	2	1278	51	260	124	16	..	....	403	16	......	..	..	..
April	2	945	37	230	83	10	..	....	499	19	79	84	10	..
May	2	1238	49	384	117	19	..	....	415	16	25	26	..	..
June	2	1293	51	345	216	3	..	....	619	24	78	52	10	18
July	2	602	24	200	71	9	..	....	350	14	15	24	6	..
August	2	820	32	430	133	17	..	....	23	1	22	21	7	13
September	2	769	30	415	134	17	..	....	....	....	100	69	10	..
Total	....	9934	....	3421	1639	1	..	....	3908	....	406	396	16	11

Returns for Silver have also been made from this district, as follows:—May, 45 oz.; June, 40 oz., 10 dwts.; July, 10 oz., 10 dwts.; Aug., 14 oz., 3 dwts.; Sept., 24 oz., 10 dwts.

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	SHERBROOKE.							BROOKFIELD.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Day's Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwt.	Gr.					Oz.	Dwt.	Gr.
October	5	5031	201	1495	436	6	..	1	1438	57	890	372	..	..
November	5	5173	206	1475	409	9	..	1	1413	56	1134	512	18	..
December	5	4238	169	1247	335	14	12	1	1583	63	892	311	..	..
January	5	3153	126	933	277	10	12	1	1510	60	1069	342	..	..
February	5	3214	128	1204	589	17	3	1	1283	51	853	240	..	..
March	5	3751	150	1334	448	16	..	1	1157	46	918	235	..	..
April	5	3974	158	1689	464	4	..	1	1270	50	882	172	..	..
May	5	4014	160	1846	530	9	6	1	1327	53	1182	352	..	..
June	5	4391	175	1507	533	..	5	1	1368	54	1098	553	..	..
July	5	2794	111	1386	420	18	20	1	1367	54	942	316	..	..
August	5	3145	125	1485	384	3	..	1	1449	57	838	282	..	..
September	5	2950	118	1290	370	16	..	1	1277	51	414	167	..	..
Total	....	45828	...	16891	5201	5	10	...	16442	....	11112	3854	18	..

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—(*Continued*).

MONTH.	KILLAG.							UNIACKE.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwt.	Gr.					Oz.	Dwt.	Gr.
October	1	......	....	31	68	..	..	4	113	4	160	105	..	..
November	1	......	....	67	121	10	..	4	203	8	162	132	11	5
December	1	......	....	55	103	8	..	4	60	2	156	166	2	..
January	1	......	....	58	57	14	..	4	1282	51	176	290	..	..
February	1	......	....	82	77	2	..	4	1082	43	154	217	..	..
March	1	......	....	7	28	11	..	4	1405	56	188	184	12	18
April	....	......	....	......	..	..	..	4	1490	59	258	150	12	..
May	....	......	....	......	..	..	..	4	1720	68	60	120	5	..
June	....	......	....	......	..	..	..	4	1373	54	163	27	15	..
July	....	......	....	......	..	..	..	3	894	35	54	52	..	..
August	1	......	....	24	33	19	..	3	1331	53	209	185	13	..
September	1	......	....	31	66	4	..	3	1268	50	159	157	16	..
Total	....	......	....	355	556	8	..	....	12221	....	1899	1779	6	23

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MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—*(Continued.)*

MONTH.	STORMONT.							FIFTEEN MILE STREAM.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwt.	Gr.					Oz.	Dwt.	Gr.
October	7	3811	152	3338	754	23	..	....	2174	86	......	..	..	..
November	7	3906	156	2992	749	5	..	....	1200	48	......	..	..	..
December	5	3593	143	2871	691	19	..	1	990	39	1160	292	..	..
January	7	2484	99	2895	741	18	..	....	576	23	......	..	..	..
February	8	2727	109	2943	1098	13	14	....	419	16	......	..	..	..
March	7	2783	111	3393	771	10	..	....	414	16	......	..	..	..
April	5	6648	261	2660	566	6	..	....	530	21	......	..	..	..
May	5	7766	310	2907	693	5	..	1	701	28	700	70	15	..
June	5	5781	271	2507	584	4	..	1	1064	42	600	68	..	..
July	6	3198	127	2691	598	9	..	1	865	34	110	75	..	..
August	6	3365	134	2873	557	3	..	1	813	32	375	53	5	..
September	6	3312	132	2747	579	1	12	1	753	30	430	38	..	..
Total	...	50374	....	34817	8386	17	2	....	10499	...	3495	537	..	..

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	TANGIER.							WINE HARBOR.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwt.	Gr.					Oz.	Dwt.	Gr.
October	1	......	....	54	76	18	..	....	216	8	......	..	..	..
November	1	......	....	60	26	16	..	....	310	12	No	Crushing.		
December	1	......	....	60	44	7	..	....	361	14	......	..	..	..
January	1	312	12	No	Crushing.			1	......	....	276	32	..	..
February	1	......	....	50	60	12	..	1	......	....	216	32	..	..
March	1	......	...	No	Crushing.			...	......	....	No	Crushing.		
April	1	......	....	184	228	..	..	....	......	....	......	.	..	..
May	1	......	....	80	102	..	..	1	95	3	5	15	19	17
June	1	671	26	125	171	15	..	....	146	5	5	1	7	..
July	1	223	8	61	41	2	..	....	278	11	50	9	..	..
August	1	216	8	455	581	..	..	....	331	13	10	11	19	..
September	1	183	7	5	8	10	..	....	345	13	75	11	..	..
Total	....	1605	....	1134	1341	..	..	....	2082	....	637	113	5	17

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—*(Continued.)*

MONTH.	WAVERLY.							OLDHAM.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwt.	Grs.					Oz.	Dwt.	Grs.
October	2	......	....	80	42	18	12	2	......	....	5	93	..	..
November	2	140	5	82	40	9	22	2	......	....	77	198	..	..
December	2	40	1	63	44	2	9	2	......	....	99	211	17	12
January	2	......	....	25	20	16	13	....	......	....	......	...	..	..
February	2	180	7	101	72	6	..	...	......	....	......	...	..	..
March	2	......	...	84	59	6	3	2	......	....	104	275	19	2
April	2	180	7	116	86	11	22	2	......	....	71	110	11	18
May	2	218	8	45	27	14	17	....	......	....	......	...	..	..
June	2	110	4	33	10	8	4	2	......	....	84	105	6	12
July	2	296	11	86	42	6	2	2	......	....	86	95	11	..
August	2	284	11	49	30	3	3	2	......	....	34	152	8	12
September	1	112	4	43	27	10	..	2	......	....	71	86	15	6
Total	....	1560	....	807	504	13	11	....	......	....	631	1329	9	14

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	MONTAGUE.							CARIBOU.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Grs.					Oz.	Dwts.	Grs.
October		1491	59	162	138	15	7	3	1291	50	300	210	19	13
November		1513	60	155	98	14	..	4	1482	59	762	150	2	..
December		1492	59	225	132	19	2	4	1565	62	980	168	16	..
January		851	34	160	111	1	..	4	1761	70	623	143	6	..
February		817	32	175	76	12	..	3	1282	51	388	71	6	..
March		1145	45	244	117	5	20	4	1560	62	607	115	3	18
April		964	38	273	160	18	..	3	683	27	510	48	14	18
May		969	33	291	248	14	..	3	695	27	475	38	6	..
June		925	37	325	100	17	6	4	499	19	420	87	11	12
July		495	19	......	...	..	..	3	1165	46	395	64	6	21
August		357	14	46	34	3	6	3	1280	51	388	59	14	21
September		410	16	56	30	10	16	4	1183	47	340	44	—	12
Total	....	11429	....	......	1254	10	23	....	14416	....	6188	1201	7	19

INTERCOLONIAL RAILWAY.

Statement showing the various kinds of Coal (in tons) received from the different Mines for the use of the Intercolonial Railway, from 1st October, 1897 to 30th September, 1898.

MONTH.	Elkin Coal Company, Hampton.	Canada Coals & Railway Co "Joggins."		Cumberland Railway and Coal Co. "Springhill."			Acadia Coal Co. Acadia, Albion and Vale.				Intercolonial Coal Co. Drummond.		Dominion Coal Company.		General Mining Association.		New Campbellton Coll'ry. Burchell Bros.
	Blacksmith.	Round.	Run of Mine.	Round.	Slack.	Run of Mine.	Round.	Slack.	Run of Mine.	Coke.	Round.	Run of Mine.	Run of Mine.	Slack.	Round.	Run of Mine.	Round.
October, 1897	....	1443	....	2409	636	....	2807	83	....	14	2389	....	9425	....	710	....	....
November "	13½	1330	....	2089	513	....	4002	52	....	....	3960	....	5227	....	623	....	....
December, "	....	1100	....	2739	974	....	4635	41	....	....	5299	....	....	59	720	....	....
January, 1898	....	1750	....	4542	837	....	1525	....	....	....	1617	....	....	....	648	....	....
February, "	....	1539	....	5387	1118	....	1219	76	....	....	1665	....	....	....	506	....	....
March, "	....	3719	....	5280	882	....	1639	49	....	....	1458	....	....	....	580	....	....
April, "	....	2278	....	5215	409	....	1157	49	....	....	1569	....	....	....	510	....	....
May, "	....	1973	....	6921	419	....	910	45	....	....	1830	....	....	....	544	....	....
June, "	....	1756	....	2872	523	....	1972	52	....	13½	1297	....	2126	....	555	....	....
July, "	....	52	875	....	434	4790	34	14	1794	....	....	1326	3294	....	68	456	....
August, "	....	....	1814	19	383	6563	54	87	3168	....	....	516	2793	....	....	312	60
September "	....	....	2002	....	115	5455	150	73	2507	....	....	1019	4014	....	....	590	....
	13½	16940	4691	37473	7243	16808	20104	621	7469	27½	21084	2861	26870	59	5464	1358	60

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	MONTAGUE.							CARIBOU.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Grs.					Oz.	Dwts.	Grs.
October	....	1491	59	162	138	15	7	3	1291	50	300	210	19	13
November	....	1513	60	155	98	14	..	4	1482	59	762	150	2	..
December	....	1492	59	225	132	19	2	4	1565	62	980	168	16	..
January	....	851	34	160	111	1	..	4	1761	70	623	143	6	..
February	....	817	32	175	76	12	..	3	1282	51	388	71	6	..
March	....	1145	45	244	117	5	20	4	1560	62	607	115	3	18
April	....	964	38	273	160	18	..	3	683	27	510	48	14	18
May	....	969	33	291	248	14	..	3	695	27	475	38	6	..
June	....	925	37	325	100	17	6	4	499	19	420	87	11	12
July	....	495	19	......	...	..	..	3	1165	46	395	64	6	21
August	....	357	14	46	34	3	6	3	1280	51	388	59	14	21
September	....	410	16	56	30	10	16	4	1183	47	340	44	—	12
Total	....	11429	....	......	1254	10	23	....	14416	....	6188	1201	7	19

INTERCOLONIAL RAILWAY—(*Continued.*)

Destination.	Tons.	Destination.	Tons.
Penobsquis	6	L'Islet	16
Sussex	87	St. Henri Junction	4,916
Apohaqui	20	Chaudiere	1,040
Bloomfield	18	Chaudiere Junction	113
Hampton	99	Levis	868
Rothsay	101	Drummondville	20
Cold Brook	1,855	St. Rosalie Junction	42
St. John (local)	53,163	St. Hyacinthe	245
St. John (West)	582	St. Lambert	187
Kent Junction	281	St Henri	142
Rogersville	28	Montreal	1,147
Barnaby River	6	Compton	32
Chatham Junction	7,848	Danville	87
Millerton	135	Coaticooke	1,702
Indiantown	6	Waterville	18
Newcastle	40	Sherbrooke	23
Gloucester Junction	1,160	Eastman	513
Bathurst	19	Magog	6,930
Jacquet River	6		
Nash's Creek	12	Total	403,429
New Mills	42		
Charlo	18		
Dalhousie Junction	24		
Dalhousie	17	RECAPITULATION.	
Campbellton	117		
Metapedia	1,700	Forwarded from	
Amqui	18		
Cedar Hall	7	Sydney	20,768
Ste. Flavie	27	Maccan	32,707
Rimouski	97	Stellarton	196,818
Bic	21	Springhill	118,837
St. Simon	7	New Glasgow	18,963
Trois Pistoles	12	Westville	15,336
St. Eloie	13		
River du Loup	2,511	Total	403,429

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LETTER OF TRANSMITTAL.

DR. E. GILPIN, JR.,

Deputy Commissioner and Inspector of Mines,
Province of Nova Scotia.

DEAR SIR :—I beg leave to transmit to you the results of surveys undertaken at your direction during a portion of the field season of 1898, in the island of Cape Breton. They are embodied in a paper entitled "The Ore-bearing Schists of Portions of Middle and Northern Cape Breton," with seven plates of maps and sections.

Very respectfully,

J. EDMUND WOODMAN.

Division of Geology, Harvard University
December 15th, 1898.

INTRODUCTION.

Owing in part, perhaps, to the later opening up of the country; in part to the mistakes of a few investors; and in part to the fact that there is in Cape Breton no one series of ore-bearing rocks of wide extent, easily recognized, the island has not received in the past the attention paid to equal areas of the mainland of Nova Scotia. In this we must except the interest in the coal formations of the Sydney Basin on the east. Moreover, for some reasons difficult to discover, the firm belief appears fixed in the minds of many that nothing good of a metallic nature can come out of the island. That this is a false impression, anyone can learn by a sufficiently careful study of the rocks.. There is no doubt but that the region occupied by the older rocks is one in which a number of districts are capable of successful development, if judicionsly handled, with the proper distribution of men and money. I am the more pleased to have arrived at this opinion because it has been reached by direct field work, influenced by no prepossession in favor of the region, with little hope held out except by a few who had seen some of the territory, and with full knowledge of the well-nigh universal condemnation accorded to the country in commercial circles. I would be unjust if I were to convey the impression that I have seen anything which indicates the presence of enormous wealth in the rocks of any locality. But it is not upon such foundations that the prosperity of a region can be based. Prosperity is far more likely to follow the healthy development of lasting investments which yield moderate rewards; and I believe there is room for such in the ores of Cape Breton. To make the best use of whatever may be in the rocks, however, thorough and systematic study must go hand in hand with investment. This is true both of the region as a whole and of individual prospects. The erratic and unscientific method of much of the search must be held responsible for a fair share of the failure to see any good in the country. A day does not suffice to exhaust the possibilities of a mining district, nor does the sight of two or three localities determine the worth of a prospect. Much will be gained if, instead of the common method, one be employed by the enquirer which shall include a study of the structure, the probable limits of the field in which ore is claimed to occur, and the chances that that particular method of ore formation may be duplicated in kind in the adjacent territory.

The method followed in this paper has been to describe in some detail those portions of the three selected regions which were most available, from either artificial or natural exposures; and to let these serve for some generalizations by myself, and still more by any who may find the research serviceable.

The rocks in which part, at least, of the ores may be expected are, as a whole, the oldest on the island, and are colored pink on the geological maps of the Geological Survey of Canada. But not all of the large areas occupied by these are favorable to ore deposits, according to the experience of the past. Except in erratic veins, whose distribution cannot be foretold, the oldest igneous rocks cannot be looked to as a source of metals. These appear in many cases to form a core in the patches of pre-Cambrian, around which highly metamorphosed sediments wrap. The latter are usually schistose; and in them or connected with intrusions into them the ores of gold, silver and copper may be expected. It is well, therefore, to look these over carefully; and they deserve study as a whole, to discover more than has yet been done their distribution and limits.

In estimating the prospect of success in a given area, where ore may be found at some distance from the coast and from flat-floored valleys, it must not be forgotten that a problem faces us which is not met on the mainland—that of transportation. Whether it be the moving of crude ore or machinery, the cost of production will be materially increased by the topographic obstacles. I am assured, however, that it has long been a settled policy with the department of Works and Mines to arrange for a liberal subsidy for new roads necessary to open up mineral localities which have proved their promise.

The chemical tests contained in the following notes have been made by the firm of Simonds and Wainwright, of New York. Mr. J. W. Folsom has aided me in some of the drawings. I have to acknowledge great courtesy from all with whom I have dealt in connection with this research, among whom must be mentioned especially Mr. W. C. Scranton of Baddeck, Mr. T. Mitchell of Whycocomagh, and Mr. H. H. Harrison of Cheticamp.

THE GOLD REGION OF MIDDLE RIVER.

SITUATION AND GENERAL CHARACTER.—The "Gold Brooks" of Middle river are tributaries from the south, the first of them joining the river four miles above the Upper Settlement, near the house of Kenneth McLennan. There are four of these brooks, numbered from one to four, number one being westernmost. The surrounding country is a flat upland, seven hundred to nine hundred feet above sea-level. From this upland, which in many places forms "barrens," the streams descend in irregular courses, following in general the structure of the rocks. Usually for several hundred yards of their upper reaches they have barely strength enough to clear the surface boulders of organic debris; but they rapidly gain in grade and velocity, and for the lower portions have cut down through six or seven hundred feet of rock. It is in these narrow glens that the best exposures may be found; and prospecting is facilitated by the fact that in their lower parts the brooks cut directly across the strike of the rocks. So far as seen, the glacial drift which mantles the bed-rock throughout the lowland areas does not reach the Gold Brooks. As a direct consequence of this, the prospector is free from the composite "surface" so common elsewhere. Moreover, he can depend upon the loose fragments, or "float," to give a clue to the distribution of the various formations below, as success in tracing veins for several hundred feet in such a manner has shown me at Middle river.

GENERAL STRUCTURE.—The main portion of the barrens on the south consists of a complex of granitic rocks, which have not yet been studied. It is certain, however, that they are of diverse ages and show intricate relations. Like all the Archæan areas, they will repay the petrographer well for any study he may make upon them. Against these lies a series of probably Algonkian metamorphic slates, and chloritic and sericitic schists. In many places the true slaty nature of the rock is readily distinguishable, from the small amount of alteration which has taken place. From these stages it is easy to follow the series into the condition of schist, and to see that the planes of schistosity are really planes of bedding, which metamorphism has nowhere been sufficient to obliterate. The fissility of these rocks is due to the presence of secondary muscovite, biotite, actinolite, chlorite, sericite, and possibly talc. That there are several separate series is evident. Yet in the present state of our knowledge the attempt to define these and to give them names would be folly.

Into these rocks have come many veins, chiefly of quartz. A large number are mere lenses, extending only a few feet, and either cut the strata or lie in the bedding-planes. In general, the gangue is rather cellular. I do not consider the fancied resemblance of the quartz in these veins, noted by early students, to that in the bedded veins of the metamorphic slates of Nova Scotia as of any weight. The origin of the ore here is different, and the two series have little in common. In addition to the lenses are more persistent veins, most of which lie with the strata; but a few occupy fissures of the ordinary type. Where the veins are most abundant a dike of quartz porphyry outcrops, having the same strike as the sediments, and lying nearly in the bedding-planes.

The whole series of metamorphosed sediments dips down under the cloak of lower Carboniferous rocks which underlies the main valley of Middle river.

FIRST BROOK.—At this brook a small tongue of lower Carboniferous projects southeast an eighth of a mile beyond the house. Like most of the rock of that age along Middle river, it is now worn down so as to form a lateral extension of the main valley. From the contact between this and the older series a fairly steep grade ascends to the upland barrens. The stream does not head far enough south to penetrate the granite area, but runs throughout its course in Algonkian rocks.

Close to the opening of the glen, the brook turns at right angles. Here several veins outcrop, apparently lying in the plane of the bedding, with a strike of N. 35° E. mag., and a dip of about 75° N. The quartz is much crushed and stained with limonite, and shows no trace of metallic ores. The country-rock everywhere along the brook is a garnetiferous schist containing chlorite and sericite, and has a uniform and persistent strike. In the bed of the stream the boulders in the lower portion are chiefly of schist. Higher up pieces of quartz porphyry appear. This is the best evidence of the presence at this brook of the dike which plays so prominent a part in the section along Second brook. At about the place where this dike might be expected to appear a rock may be seen which resembles the general ground-mass of the porphyry, but is less red and more dense. It is narrowly and evenly banded in an east and west direction, and is an exact counterpart of the marginal portions of the dike at Second brook. The outcrops suffice only to give these characteristics; but it is almost certain that the porphyritic portion lies concealed a few feet farther south. The syenite gneiss of the next brook does not appear; but this is not strange, as the intrusion may be merely local, not extending so far. Much quartz is present on the hillsides and in the brook in small boulders; but few veins can be seen in place, and those are barren. The quartz boulders bear the aspect, however, of not having travelled far, for in many cases the soft walls of sericitic schist remain. Here and there throughout the lower two-thirds of the brook are evidences of former workings or prospects, but nothing more extensive than small dumps and one short ditch running north and south. None of the dumps show any ore.

In its lower half the brook runs almost down the dip of the schist. In its upper half, however, its course is parallel with the strike; and this feature of adjustment to structure is noticeable to a greater or less extent in all neighboring streams.

SECOND BROOK.—Second brook is much larger than First, and has a narrow steep-sided valley to within a few yards of its mouth. Between the two streams schist outcrops in places on the bank of the main river. Here the beds are knotted and crumpled and show the spotted condition of early stages in the formation of garnets by metamorphism. The variation in strike, due to crumpling, is only local. This irregularity obtains also in the lower portion of second brook; but the stratification becomes more even and the dip steadily higher southward toward the granite area. In the exposures along the main river are a number of veins, some of which are productive but of very low grade. Those carrying gold lie above the lower end of the long flat island. There are also to be found a number of quartz lenses up to a few feet in length, cutting across the strata. So far as known they are all barren.

In the glen of Second brook there are no veins in the lower portion which show any promise, and for two thousand feet from the mouth there is little of importance. At about this point the veins become more abundant, and several appear to be of economic value. Most of those here and farther south are conformable with the strata, but a few occupy true fissures. Among those is one designated by the owner as the "Lizard Lode." This is irregular in strike but runs very roughly parallel with the bedded leads. Its dip is north at a somewhat higher angle than that of the country-rock, and in places vertical. The fissure varies in width from fifteen inches to three feet, and is filled almost entirely by quartz, often with a banded structure near and parallel to the margins and with drusy cavities near the centre. The vein is frequently swelled and pinched, and slickensides along its contacts show much slipping. Both walls are of soft schist. Close to the foot-wall is a mass of hornblende syenite gneiss one hundred feet wide. The contacts of this belt on the north and on the south are not visible. Under the microscope the rock is seen to consist of orthoclase felspar, much crushed, and biotite, with a large amount of hornblende. All these show distortion by dynamic agencies A little apatite is present but no quartz. The whole rock is much weathered.

South of this intrusive is a peculiar black schist, more massive, than those on the north; which may be either a more metamorphosed portion of the same series as before noted, or of quite different origin. It is conformable under it. On the southern border of this, five hundred feet from the Lizard Lode and 2500 feet from the mouth of the brook, is a dike of quartz porphyry fifteen to thirty feet wide. This dike has the same east and west strike as the schists and apparently a somewhat higher dip. Its margins are irregular. It has been followed for three and one-half miles eastward from First brook and is fairly persistent in strike. The main portion of the dike consists of a fine-grained pinkish ground-mass, with phenocrysts of quartz and a few of orthoclase. On the margins these crystals are absent, and the rock takes on a dense flinty or felsitic appearance and pinkish-brown color, and is banded parallel to the contact. Under the microscope the large quartz crystals show resorption due to partial melting of their mass. They are often surrounded by a thick rim of very fine particles of quartz and a brown polarizing substance which has regular crystal outlines, but which has not yet been determined. In addition to this is a brown non-polarizing mineral, distributed in irregular tufts of radiating fibers. These, with some plagioclase. constitute the ground-mass. The dike is of great interest from a petrographic standpoint, varying considerably from ordinary porphyries.

South of the dike the veins are more numerous than on the north. Most of them are known to be barren, but one or two near the dike carry metal. In general the veins, both barren and metalliferous, increase in number towards the dike and decrease rapidly away from it on either side. It is noticeable that both bedded and fissure veins near the dike possess characters of mineralization different from those in other parts of the schist series.

Beyond the dike, up to somewhat more than a mile from the mouth of the brook, the exposures show schists in every way like those on the north, and evidently a part of the same series. Those near the dike are more massive than the ones north of it, and become denser away from the intrusion. They strike roughly east and west magnetic, and dip north, more steeply than those near the mouth of the brook. Slickensides are abundant throughout the mile of section; and their freshness not only gives some idea of the amount of stress under which the rocks have been in ages past, but proves that they are still yielding to similar strains. To the south lies a granitite from which the schists dip off steeply. The granitite is a very acid variety, containing much quartz. It is friable, quite coarse, and of a red color, the last due to a partial weathering of its orthoclase felspar. Probably this is the same rock referred to as "red syenite" in the Report of Progress, 1882-3-4, of the Geological and Natural History Survey of Canada, p. 29 H.

THIRD BROOK.—Between this and Second brook the main river is flanked by cliffs, now on one side, now on the other. This will render somewhat more expensive the carriage of ore from the third brook beyond. The rocks are not worthy of special note, being schists similar to the rest of the series.

It is impossible to correlate the veins outcropping along this brook with individual veins on the one next below. They are fewer in number, and do not show so much promise in the field. A number of small lenses are present, and altogether the aspect is much the same as in the outcrops along Middle river. The general section shows the same succession of rocks as on Second brook. On the whole the syenite gneiss grows wider toward the east and narrows considerably between First and Second brooks; and may die out entirely. It has not been recognized on First brook. The general sequence at Fourth brook is the same as at Third.

ORIGIN OF ORE.—That the ore and veins have a deep-seated origin is highly probable. Slight traces of gold have been reported in the rocks on the north side of the river. But, although prospectors have searched the region, little has been found. The occurrence at the Gold Brooks is, I think, a local one; and is connected closely with the intrusion of quartz prophyry. It is impossible to say, without more minute study than the case warrants, whether the bedded veins and ore belong to a period before the deformation of the sediments or not. The fissure veins, at least, are the product of a later age. The gneiss and porphyry show two periods of eruption, and there may be also two of veining. All that can be said at present, is that the phenomena appear to indicate what is called solfataric action subsequent to, or roughly contemporaneous with, the instrusion of the prophyry. It frequently happens that after an attempt at volcanic action, vapors rise from the heated interior of the earth through any fissures that the rocks may possess, especially those near the vent through which the lava was forced up; and even when no distinct volcanic attempt can be detected, this takes place. When no fissures are present, these heated vapors penetrate the minute spaces between the grains or crystals in the rocks. Coming constantly to regions of less pressure and heat, they quickly lose their power of keeping in solution all the chemicals which in the depths they were able to hold, and so little by little they drop the silica, lime, metallic compounds, and other substances which they may have. In such a way the ore here probably orignated. The fine character of it, its extreme dissemination and the entire absence of pockets, all point to the conclusion that little concentration has taken place since the first formation of the veins.

ALLUVIUM.—At the mouth of First brook, where the valley widens, sufficient alluvium has accumulated to hold considerable gold under the proper circumstances. Fifteen or twenty years ago this was panned by various individuals, with some success, according to report. That there was—and is still—gold in this deposit, is more than probable. But it is impossible that it should pay for any extensive investment of capital. The area of the gravel is entirely insufficient.

At the mouth of Second brook is the most promising alluvial deposit of the region. The surrounding topography shows that this mouth has shifted repeatedly, and at least one abandoned channel is visible at the present day. All the evidence goes to show that the brook has wandered back and forth over its bed here, driven by the changes in deposition of the main river as well as by variations initiated by itself. Hence, inasmuch as Second brook appears to cross the most valuable veins, its mouth, so well adapted to receive and hold any metal brought down from the hillside, should repay careful enquiry.

Between First and Second brooks, in the valley of the main river, there are flats of considerable area which may contain some gold carried past the mouth of the brook above. I am told that some gold has been obtained for a considerable distance below First brook, but there is little probability that it would prove of economic importance. Third brook itself apparently gives less than Second;

and the gravel about its mouth, while it may contain gold, is not so likely to prove of value as the region near the stream below. Between these two, flats alternate with holes; and it is improbable that gold would travel far down the stream. Transportation between Second and Third brooks would be somewhat costly and difficult.

ECONOMICS.—Second Brook is the best field for capital as far as known at present. The water power is fair. There is a head of about five hundred feet at the "Lizard Lode," but the stream is not large. However, in mid-summer it seemed sufficient for such operations as would be necessary in treating any amount of ore likely to be taken from the glen. Veins which are said to be auriferous, and which in some cases are readily seen to be so, have been stripped for a total length of 1,400 feet, and a vertical height of at least 700 feet. This should make it easy for anyone who desires to test the field carefully to procure unprejudiced samples himself, with little labor would yield a small net income. The gold is largely free, yet so fine as to be only occasionally visible to the naked eye. It is associated in the "Lizard Lode" with galena, pyrite, chalcopyrite and other sulphides. Apparently it is never in pockets, and on the whole is evenly distributed. An amalgamation assay was made by the analysts, of a combined sample of parts of three specimens, with the result that 78.7% free gold was saved on the plates. These statistics will give an idea of the character of the ore. The gangue is rather dense for crushing, but not too hard to give satisfactory results. Platinum is said to have been found frequently in the alluvium, and to have been detected in assays; but a test made for me failed to bring to light even a trace. Bismuth has been reported in a few instances.

There is ample room for development here, especially between First and Second brooks, and for an unknown distance east of the latter. The veins have been traced only a few hundred feet in this direction. But, while proper capitalization would bring success here, little success would attend divided interests. The manner in which present ownership of the land is distributed, and the limited field for operations, make this probable. Transportation down the valley of Middle river will not be difficult, although a good road is needed if activity arises.

I have had a number of assays made of the contents of the quartz veins of the Middle river. As my work was understood to be, as far as possible, of a general nature, I do not give the names of the veins, or the nature of the assays. They were of a very encouraging character, a number running several ounces of gold to the ton. Should these results be confirmed by larger and more systematic sampling and assays, it would appear that in this locality decided auriferous values are available to the miner.

In general, since the auriferous veins accompany the quartz p [illegible] dike, the region covered by the length of the dike should [illegible] d by occasional north-south trenches running across [illegible] for half a mile beyond. If, as seems probable, the syenite gneiss diverges from the dike eastward, veins may be found somewhat farther away from the dike as one goes east. Not enough is known of the country to tell with any certainty whether such efforts will meet with success, but the exploration is worth making. Some of the leads near Second brook have been followed for at least 500 feet, and seem very persistent. As a rule the upland surface between the brook glens has no outcrops and is heavily covered with vegetation. But the surface "float" ought to show something of what is below, upon uncovering the matted vegetable remains. The glens will give rock sections except close to their heads. The element of transportation must not be overlooked in prospecting the region. The farther east one goes, beyond Second brook, the more difficult it will be to carry ore down the valley. The upland would be suitable by deviating from a straight course far enough to avoid the glens which head there, but this would necessitate a long journey. The valley of the main river contains cliffs, already mentioned, which would make road-building expensive.

WHYCOCOMAGH.

SITUATION.—The gold district here lies in the hills north of the village of Whycocomagh, which stretch up into the "Mullach." The general geology is briefly as follows: The oldest rocks are supposed to be pre-Cambrian. They consist of crystallines and metamorphic sediments, the latter probably of Algonkian age, with very involved and obscure structure and history. Long after they were formed and had passed through the most complicated portions of their history, they lay in part beneath the water. This was very early in the Carboniferous era. Many feet of sediments were laid down in this water, made from the waste of the older rocks. These sediments have since became hardened and otherwise changed. The whole country has been raised again, and the softer Carboniferons conglomerates, shales, sandstones, limestones, etc, have been, for the most part, eroded into valleys, leaving the older rocks on hills or level uplands. It is in these eminences that the gold here and near Middle river and the silver-lead ores at Cheticamp are found, and the outlines given above will apply as well to those districts.

There are two areas of these old rocks at Whycocomagh. One lies west of the bay and embraces the heights called the Craignish hills, including Skye mountain. The other takes in the Mullach, north of the village, and extends well up to the south end of Lake Ainslee.

CRAIGNISH HILLS.—This area has been described as consisting largely of limestone on its northern side, but in reality there is comparatively little. The rocks have never been properly divided into series, but are mainly schistose. A few quartz veins occur with the same strike as the schists. Near the head of a small branch of Brigend (now called Roseburn) brook, north of Rory

Gillis' house, a small amount of copper has been found in the form of chalcopyrite, azurite, malachite, and possibly chrysocolla. The minerals occur in quartz veins, the attitude of which has not been determined. The quantity does not warrant any exploitation, although several barrels of ore have been shipped away at various times. On the road along Brigend brook, near the saw-mill, is a deposit of talc of some extent.

MULLACH AREA.—The critical section of these old rocks, for economic purposes, is that shown in and near a tunnel one and a half miles north of Bay View hotel. This appears to have been open for some years, but is only a prospect. It lies on an unnamed brook, the first one south of Mullach brook, on the south side of the Mullach. The tunnel runs north at a point where the brook turns quite abruptly from a south to a southwest course. It gives the following section northward, the distances, which are roughly estimated, being horizontal and not intended to represent thickness of the strata:—

(1)—Dark green schist........................	10	feet.
(2)—Limestone, strike N. 65° W. mag., dip 48° N..	15	"
(3)—Quartzite	100	"
(4)—Limestone to end of tunnel................	15	"
	140	feet.

At the contact of (2) with (1), which has the same strike and dip as the banding of the limestone, the schist is soft and crumbly, and tongues into the limestone. The appearance suggests that an ordinary sedimentary contact has been faulted in the course of the metamorphic and orogenic processes to which it has been subjected. Schistose spots also appear in the limestone, due probably to a local formation of serpentine and chlorite. The quartzite has a shear-zone at each contact. Indeed, it looks frequently as though the schist and quartzite graded into each other. The schistosity is due in part, at least, to the presence of innumerable small slickensided lenses, which are themselves fairly hard. The quartzite has been called "felsite" by some students. But thin sections under the microscrope show a fragmental character, the quartz grains and secondary quartz being easily seen. The grains are extremely fine, and interlock closely. A wavy extinction under the polarizer shows how strong the orogenic forces are which have acted upon it. The cement is largely quartz and calcite, but not entirely. The remainder cannot be determined, because of the small polarization.

South of the tunnel, near its mouth, it is more quartzite. Down the brook the section shows alternations of quartzite and limestone for a considerable, but unmeasured distance. South of this for five hundred yards is a belt of a coarse, pink granitite. Beyond this is more quartzite to the edge of the pre-Cambrian area. No ore has been found south of the tunnel. The lowest of the metamorphic honiferous series at this point is a conglomerate member, resting, onformably upon the older rocks.

Northward from the tunnel the rock is chiefly limestone, as far as any outcrops are visible in the stream bed. One hundred yards north of the mouth of the tunnel, a quartz vein five inches thick crosses the stream with a direction N. 15° W., and a high northeast dip. North of the vein are three inches of quartzite, and beyond this two feet of schist, then four feet of limestone, the outcrop ending here. Much ore occurs in the vein and quartzite and a small amount in the limestone. Bands of ore cross the stream in several places beyond this, but in general becomes less abundant away from the tunnel.

THE ORE AND ITS ORIGIN.—The ore throughout this region consists to the eye chiefly of massive and granular arsenopyrite. Here and there is a little pyrite or chalcopyrite, but these are not abundant. The sulphides sometimes occur in veins of quartz, but usually in the country-rock without gangue. Where the limestone is mineralized, the metals lie along the planes of schistosity, and their general distribution appears to bear no relation to the presence or absence of veins. The chief part of the ore is to be found in the quartzite; and where the limestone contains sulphides, quartzite is usually not far distant. In places where this rock appears to merge into the dark green schist, the ore runs for some distance into the latter; but as a rule the schist is barren. Almost all of the quartzite is impregnated with arsenopyrite to such an extent that particles of it are visible in every piece. Frequently, however, the mineral is concentrated in bands or lenses, roughly parallel with the contacts of the quartzite with its neighbors. A number of these lenses cross the brook or are visible on its side within half a mile north of the tunnel. In a few cases distinct lenses are visible in quartz veins. At a distance from the tunnel an increasing proportion of pyrite and chalcopyrite appears.

It seems evident that there is a close connection between the presence of the ore and of the band of quartzite It has been stated that the connection of the ore was with the metamorphic limestone, but the abundance of the former in the quartzite and its steady diminution away from that rock seem to point to the other conclusion. The crystals of the sulphides are scattered irregularly through the mass of quartz grains, where not bunched together, and appear to have no connection with each other. The ore has suffered all the changes which have affected the country-rock. The most probable history, from the evidence gathered thus far, is that the metallic compounds came into the rock by solfataric action from below, while it was still an ordinary sandstone, as has often happened in other places. Then the after history of the sediments has affected also the ores, perhap aiding in their concentration. The alternative possibility here is that the necessary materials existed in the sediments, and have been merely concentrated by metamorphic agencies. But the scarcity of sulphides in the finer sediments, now transformed into schists, makes this improbable.

ALLUVIUM.—In the lower reaches of the brook on which the tunnel is situated, sluicing on a small scale has been carried on with success. Some of the gold which I have seen is much coarser than any at Middle river. Two or three pennyweights are sometimes taken out in a day. The appearance of the grains is not different from that of most placer gold, except that the shape suggests a shorter passage in the water than often is the case. Not enough silt can accumulate anywhere on this brook to employ more than two or three men, or to give sufficient returns to warrant a company working it. Two or three men can probably earn laborers' pay from it. Its chief interest lies in the positive proof which it gives of the presence of an appreciable amount of gold higher up in the basin included in the drainage-area of this brook and its tributaries.

The only stream whose valley will permit the detention of sufficient alluvium to form a large placer deposit is Mullach brook. Below the margin of the pre-Cambrian rocks the valley widens rapidly, while the walls are tolerably steep. The bottom is flat. From here to the mouth, where the brook empties into Skye river, the gravel flood-plain is continuous and of considerable depth. A number of pits have been dug, the lowest of them east of the fence which runs across the valley at the end of the wagon trail. Here the bed-rock is four feet down. The gravel is reported to grow deeper up-stream, the deepest shaft—twenty feet—not reaching bottom.

The material varies much in texture, but is never very fine. It consists of boulders of granite; quartzite of at least two aspects, pink and gray; quartz, and in the lower portion conglomerate. The filling between the boulders is largely quartz, with garnets and magnetite in the sandy portions. The stratification is poor. A little gold was seen during my study of the area. An assay gave only a trace, but it was hardly a fair sample, as it was taken from the surface. Those who have opened the pits and shafts report that the metal is not in flakes, but in fairly coarse, irregular masses, often perforated. An average yield of $2 to $3 per ton is claimed for it.

The source of the gold is evidently the head-water region of the brook and its branches within the pre-Cambrian area. The abundance of quartzite and absence of limestone are suggestive, as is also the predominance of quartz among the finer constituents. I have found such a difference in composition between the two portions of a coarse conglomerate to be of frequent occurrence, as in the fossil placer of Gay's River, Colchester county, Nova Scotia.

Upon the moderate estimate of 2,000 yards workable length, 220 yards average width and 4 yards depth, the contents of the placer would be 1,760,000 cubic yards and its weight approximately 3,000,000 tons.

ECONOMICS.—The extent of the mineralized zone along the strike is not known, but appearances seem to indicate that it runs for a quarter of a mile or more eastward and for three-quarters of a mile toward the west. The surface away from the brook is for the most
with vegetation and shows little bed-rock, but pros-
be done in the direction indicated.

The belt is not a wide one. South of the tunnel there is probably little to be gained by exploration. As the formations dip northwest, and there is no evidence of an anticline, there is no probability of finding the same strata again anywhere to the south. Whether the occurrence of the ore is purely local it is impossible to say, but the fact that the sulphides are connected with the quartzite and not the limestone would indicate at least the impracticability of searching for gold elsewhere on the basis of the presence of limestone similar to this. Many other limestones have been seen in these old rocks, but unaccompanied by such deposits of ore.

As the general map shows, the area of old rocks over which prospecting could be done is somewhat more limited than the geological map of 1884 would lead one to suppose. That ore occurs north of the head-waters of this brook is known from the presence of placer gold in the lower reaches of Mullach brook. The nearer of the two coördinate branches which by their union form that stream, heads a mile from the source of the brook on which the tunnel is situated, and half a mile more from the tunnel itself. Between the two sources the land is quite high and flat, and it is certain that most of the water which finds its way into Mullach brook has not travelled far. There is, however, a small branch of Mullach brook which heads about half a mile north of the tunnel, and some gold may have travelled by this route.

Aside from tracing out the continuation of the quartzite stratum described in this paper, one who desires to develop the region should hunt for similar conditions among the other stratified portions of these old rocks. There is also the possibility of the presence of gold under conditions different from those which have been studied here. The absence of anything is hard to prove in geology; and all that can be done is to indicate the positive evidence obtained.

Three assays have been made of the rocks in and near the tunnel, and one from what appears to be a quartzite, on the southeast branch of Mullach brook—the one heading near that on which the tunnel is situated. Number (1) was almost pure sulphide, with a little quartz, and was selected for this purpose; (2) was quartzite, taken at random from within the tunnel, and well impregnated with sulphides; (3) was limestone taken from the same place, in the same way; (5) was taken at random from a portion of the brook above mentioned, where it was supposed that gold is present. The assay returns all gave the same results—a trace of gold and no silver.

This is significant, for several reasons. In the first place, the samples were such as ordinarily ought to give considerable variation in the amount of metal. In the second place, the amount of placer gold in the lower portions of the brook, and its coarseness, is sure indication that within the area drained by the stream there is more gold than the assays indicate. While we must accept the results of analysis for the immediate locality under discussion, I feel confident that the region embraced between this brook and Mullach brook contains gold in appreciable quantities. Whether it will be of economic importance remains to be seen. Certainly further exploration is worth making.

As regards copper, I do not consider any of it that has come under my notice as worth attention. An old property lies a little aside from the path leading from Whycocomagh to the tunnel, and to the east of it, on the top of the first hill. The character and extent of the deposit are not well known. The latter can be studied only by a sounding-rod, as there are no natural outcrops near the two small pits from which ore has been thrown up. The ore consists, as far as can yet be seen, chiefly of carbonates. An assay of a promising sample yielded only 1.64% copper. Under the circumstances, while exploration is advisable, there is nothing yet in sight to warrant the expenditure of money in development.

CHETICAMP.

SITUATION.—The general situation of the ore-bearing rocks at Cheticamp is somewhat different from that at the two other places. They form a portion of a great plateau covering most of northern Cape Breton; and at their base lies, not the metamorphic portion of the lower Carboniferous, but the next succeeding group, which is unmetamorphosed. The former usually contributes both hills and valleys to the landscape; the latter only valleys, in this region. This lower portion consists at Cheticamp of a narrow strip along the coast, widening southward towards the village of Margaree Harbor; and from it the outlying spurs of the pre-Cambrian plateau rise abruptly. From the center of the upland, streams flow westward to the gulf; and the spurs are formed by branches of these streams which have cut their way downward for hundreds of feet, and separated portions of what was once a unit. In the sections exposed along these brooks, a few outcrops of galena have been found by various prospectors. The country between the waterways is rugged, with steep sides and flat tops, and either covered by dense growths of wood or abounding in precipices and dangerous talus slopes. The most accessible route to the interior is Cheticamp river; and along its course prospectors have travelled to and from the east coast. Some of its branches and the small brooks of the region have been explored in part; but chiefly about two decades ago, when only slight traces of ore other than copper had been found.

STRUCTURE ON FARIBAULT BROOK.—In ascending Cheticamp river, the first branch from the south which is met after leaving the Carboniferous area is Faribault brook. This stream is given the local name of L'abîme brook, because of a considerable gorge and fall one quarter of a mile above its junction with the main stream. The Carboniferous rocks extend in a tongue for three-quarters of a mile up the valley of the Cheticamp, beyond their limit in the surrounding region. The last outcrops are of fine red sandstone striking N 47° E. mag., and dipping 48° N. W. East of this for a fourth of a mile the outcrops along the river valley are of a white granite, very felspathic and considerably weathered. The surface float from the mountain to the south is also of this material. Certain others of the massive crystalline rocks are included within this range, but it has been impossible in a reconnaissance to separate them areally. From the eastern edge of this granite mass, one-fourth of a mile below the junction of the brook with the main river, schist extends to near the head of the brook. The occurrence of massive plutonic rocks west of the metalliferous schists is interesting, for several reasons. In the first place the relations between the two classes of rock at this point are unknown. Thus it is possible that the granites are intrusives of younger age than the schists, and have cut them off. If this be so, they are different from the granites of the interior, some of which are manifestly older than any of the schistose rocks which have been explored, and lie unconformably beneath these metamorphic sediments. In the second place, they indicate that the presence of massive rocks on the coast and near the mouths of streams is no proof that ore-bearing schists may not be found in the interior. This is important to the prospector.

The sections along the lower portion of Faribault brook can best be seen on the line of the road to the shafts of the Cheticamp Mining Company. Close to the granite area it is impossible to observe the attitude of the schists. At the first exposures where the structure is plain, the strike is N. 38° W. mag., and the dip 30° N. E. Going southward along the brook, the strike gradually swings eastward, until at the first streamlet below the mine it is N. 5° W. mag., with the dip 40° N. E. At the shafts of the mine the strike has changed to N. 75° W. mag., with a dip 30° N. South of this, schists of approximately the same attitude continue for at least a mile. All these rocks appear to belong to the same series, and vary only in slight changes of color, texture and secondary minerals. The different varieties grade into each other, and it is impossible to make distinct subdivisions. South of the mine are two or three belts of what is locally called "whin." Whether it is the same as the whin of the metamorphic gold series of Nova Scotia is doubtful. From its appearance in the field, it may be a dense quartzite or a fine-textured trap. The attitude of these masses with relation to the schists cannot be seen.

The schists are not crystalline, but are clearly metamorphosed sediments, in places passing into chloritic slates. The secondary minerals will be referred to again in the discussion of the mine.

ORES ON FARIBAULT BROOK.—The sulphide ores lie mainly in the bedding of the schists, either with or without the presence of quartz veins. At the openings of the Cheticamp Mining Company two inclines had been driven in the season 1898, for a few feet downward along the bedding-plane. The main portion of the rock in these is schist, but forming the hanging-wall of the first opening is a metamorphic slate, apparently quite distinct from the underlying rock. It was found upon examination, however, that the formation is not thick, and that above it lies more schist in a conformable position. The details of the contact, also, show that the slate is merely a less metamorphosed portion of the series, and not a separate member. Indeed, throughout the section cut by the brook, all the variations in the schist appear upon study to mean nothing but slight differences in the secondary ingredients.

A number of bedded veins occur in both the openings. For the most part they are barren, but occasionally contain small amounts of ore. A few cut across the planes of fissility. The veins are of two classes as regards appearance. One of these is composed entirely of a dense white quartz, while the other has also a quartz as pink as some weathered feldspar. In the latter case the two varieties are not banded, but are thoroughly mingled. As far as observable, the color is not due to secondary staining, but to an original impurity of the mineral.

The ores are blende (zinc sulphide), galena (lead sulphide), arsenopyrite, chalcopyrite, niccolite, and possibly pyrrhotite. The niccolite occurs as a common constituent of quartz veins, but also within the schist associated with galena. Chalcopyrite appears to be more frequently connected with veins than does niccolite. Arsenopyrite impregnated the rock in this belt more thoroughly than any other mineral. It is entirely granular and is frequently closely associated with galena. Assays show a small amount of gold in the schist, apparently all held by this mineral. The blende is found in rough lenses, in thin stringers and beds a few feet in length lying in the planes of schistosity, and in stringers occasionally cutting the beds through small fissures. In the first opening the ore appears to the eye to be almost entirely galena, with little blende. It is common here to find lenses, one end of which lies at one horizon and the other end several beds higher. These ends are conformable to the strata, but the central portion runs in a jagged rent between the two. The serrated appearance possibly indicates a slipping along the bedding-planes. It is interesting to note the lack of relation between the breadth of the ore bodies and the texture of their crystallization. In many instances, masses several inches in thickness are so fine-grained as to be almost granular. In other cases, ribbons scarcely half an inch wide have crystals which occupy a large fraction of their cross-section. In general, especially in the larger instances, the rule holds that the finer texture occupies the walls and the coarser crystals the interior. But even this is not without its exception, and here and there are examples in which the reverse is true. This shows how complex must have been the factors which influenced the deposition of the sulphides from the hot solutions or vapors.

The rocks at the lower opening give evidence of considerable dynamic action since the desposition of the ore. The planes of schistosity are often slickensided, and small over-thrust faults are abundant. This is illustrated at a depth of eight feet from the opening where a somewhat greasy garnet-schist is in contact with an underlying blue variety, and over-thrusting has taken place both along and across the bedding-planes. The ore penetrates in stringers into the overlying slate for about a foot.

The second opening is stratigraphically somewhat lower than the first, and does not show the hanging-wall of slate. The ore here is almost entirely blende, and very little galena is present. The country rock is a massive blue schist which underlies the light greasy variety of the first opening. It rarely contains garnets, or even the little knot-like projections which are prophetic of future garnets, and is also much less fissile than the overlying beds. The blende occurs in irregular lenses and stringers approximately conformable with the strata, but rarely interesecting them. It is as abundant here as galena is in the first opening. It usually possesses a finely crystalline texture, and apparently never is as coarse as much of the galena.

On the mountain-side above the mine, float is found containing both galena and blende. The schists extend for a considerable but unknown distance to the east. Many of the exposures along the brook show gash veins cutting irregularly across the bedding and tapering quickly at both ends so as to form lenses. They are usually local, and so far as known are totally barren.

The mine is on the east side of the brook. Ore can be found also on the west side, and for a little way up the mountain. Beyond this the bed rock is thickly covered, and no prospecting has been done. It is certain, however, that there is a thickness of at least four hundred feet which contains ore and may be found valuable.

ORIGIN OF THE ORES.—The distribution of the sulphides points distinctly to the conclusion that none of them were connected in their genesis with the entrance either of the bedded veins or of the gash veins. Rather it appears that the veins are in a measure accidental as far as the ores are concerned. There is little doubt that the blende and galena came from below, and probably the other sulphides as well. In general the amount of those substances increases with the metamorphism of the country rock. It is probable that not all the changes in the slates were effected by dynamic action, but that heat and soltaric action have played an important part. A study of the surrounding rocks shows the improbability of concentration by lateral secretion, and moreover, only a small percentage of the ore lies in what were clearly pre-existing fissures. The differences in the character of distribution of the various minerals does not prove a variety of sources for them, but does appear to show different periods of concentration. Thus the arsenopyrite is present elsewhere, while the galena is limited to definite bands, lenses, etc., and only now and then does the microscope or lens show particles of it at a distance in the schist. Again, in the areas now opened in mining, galena is found abundantly in a zone below the slate belt already mentioned; while blende is found in a belt several feet lower. The distribution in the margin between these two is not known. On the west side of the brook, galena occurs again in beds lower than those which contain the blende; and by means of "float" on the mountain-side to the east, and outcrops in the little canon a quarter of a mile below the mine, it is known that the ore also occurs considerably above the slate belt. It is upon this basis that the estimate of thickness given above is made.

CHETICAMP RIVER.— For some distance east of Faribault brook outcrops along the river are few. Schists of the same nature as those on the brook extend intermittently for several miles, but show no trace of ore. Beyond the cabin of the game warden, which stands at the end of a trail leading up the valley bottom, the schists are intruded by granites. The strike of the planes of schistosity is in several places N. 40° E. mag., and the dip 32° S. E. The schists vary comparatively little throughout the distance observed, and appear to be of nearly the same hardness as the younger granites. Actinolite and chlorite are the commonest secondary minerals. In places the granite is so abundant that it has formed a coarse breccia with a granite base and innumerable horses of schist. Here and there both series of rocks are cut by irregular dikes of trap.

STRUCTURE NORTHWARD ALONG THE COAST.—Robert brook flows throughout over igneous rocks—granites, amygdaloidal trap, quartz porphyries, etc. Jerome brook also passes over igneous rocks until it reaches the Carboniferous area near its mouth. For the last quarter of a mile it follows approximately the contact between this and the pre-Cambrian.

At various places along the coast schists appear, to a great extent similar to those on Faribault brook. The remainder of the shore, exclusive of the small patches of Carboniferous sandstones at Presq'ile, at the mouth of Trout brook, and south of Cape Rouge, consists of massive coarse-grained igneous rocks, for the most part granites. In several instances contacts between these and the schists indicate that the former are intrusive into the latter. This is an encouraging point, for if the granite were a part of the old core of this portion of the island there would be less probability of finding schistose rocks away from the coast. As it is, it is very possible that inland beyond the regions yet covered by prospectors, schists of economic value may be found.

At the old copper mine north of Jerome brook and south of Presqu'ile, chalcopyrite, malachite and chrysocolla occur in calcite veins in a dark trap which is sometimes massive and sometimes schistose. The trap is a local occurrence and intrudes into an acid granite. This variety of granite extends southward at least as far as Jerome brook. Between here and Presqu'ile granite lines the road in large part and is intersected by many trap dikes, some of them regular, some irregular. It would pay to examine these carefully for economic minerals.

On the side of the mountain east of the lake at Presqu'ile copper has been found in rather irregular calcite veins, lying in schist which strikes east and west mag. and dips 55° N. The vein where exposed is about three feet wide and its length is unknown. The calcite is very cellular, probably owing largely to solution. The ore occurs as chalcopyrite, malachite, chrysocolla and brown oxide. The minerals are often well crystallized and lie in separate small irregular masses, but are quite evenly distributed in the vein.

The schist along the shore from the southern end of the lake at Presqu'ile to Corney brook is similar to that at the second copper locality, lying approximately in the same position and varying throughout this distance only in minor details of texture and ingredients. Two hundred yards south of Corney brook the schist ends against granite. At the stream is a complex of granites, and for at least one and one-half miles up the brook the bed-rock consists of granites, amygdaloidal trap, and several varieties of porphyry. Probably the large mass of schist to the south extends inland for some distance, forming a roughly crescent-shaped mass. Much of it resembles the lighter portion of the schists on Faribault brook, with talc and sericite and knots of minute garnets.

ALLUVIUM.—There is only one stream whose valley is broad enough to render washing for free gold possible on a large scale. On Faribault brook some panning has been done in a small way with good results, and doubtless some of the other brooks would also yield a little gold in sheltered places near their mouths where sediment may have accumulated. As a rule, however, the grade is too steep to allow much metal to come to rest, and the deposits of alluvium are too small for other than hand work. The lower portion of the valley of Cheticamp river is flat-floored and covered with water-worn boulders and gravel over a varying but considerable width. But the rocks near the source have not been found to contain gold to any appreciable extent, and while many portions of the alluvium give a small yield there is nothing in sight to encourage prospecting.

ECONOMICS.—It is probable that here as elsewhere there is little to be gained by systematic searching for the precious metals in massive igneous rocks such as the granites. These rocks do contain gold and silver, but chiefly in irregular fissure veins whose distribution is erratic and ungoverned by any known laws. As an example of this, the cliffs immediately north of the mouth of Jerome brook show many large calcite veins which very possibly contain copper. In this case they are inaccessible, but there is no reason to suppose that this is the only portion of the granite areas which contains such veins. In general, then, it would be wise to examine carefully any such occurrences found within the granite zone. In regard to the region north of Jerome brook occupied by the schist, it is worth while to determine its extent inland and to prospect it carefully. It is highly probable that it contains much more copper than has ever been found in it. Its similarity to the schists of Faribault brook indicates also the possibility of silver-lead ores of some importance. Those on Faribault brook remained long unnoticed. Up Cheticamp river it appears as though little good would be gained by extensive search. Below the first gorge outcrops are few and unpromising. Something may be found, however, higher up on the sides of the hills near by. Whatever may come from this region will find easy transport to the coast, but beyond the lower end of the gorge the valley is narrow, steep-sided, and completely filled in times of freshets.

The schists south of Cheticamp river have been opened up sufficiently to show that they contain ores of some worth. It would be profitable to extend the explorations of these, both along the strike and also across it. In a few cases stream cuttings may serve, and in others the outcrops on the hillside are numerous enough to be of some aid; but artificial stripping of the surface will generally be necessary.

PLATE I.

General map of the Middle River region, from the map of the Canadian Geological Survey; showing the position of the district which has been for so long prospected for gold, and its relation to the surrounding country. The parallel lines represent the Carboniferous in the valley of Middle River.

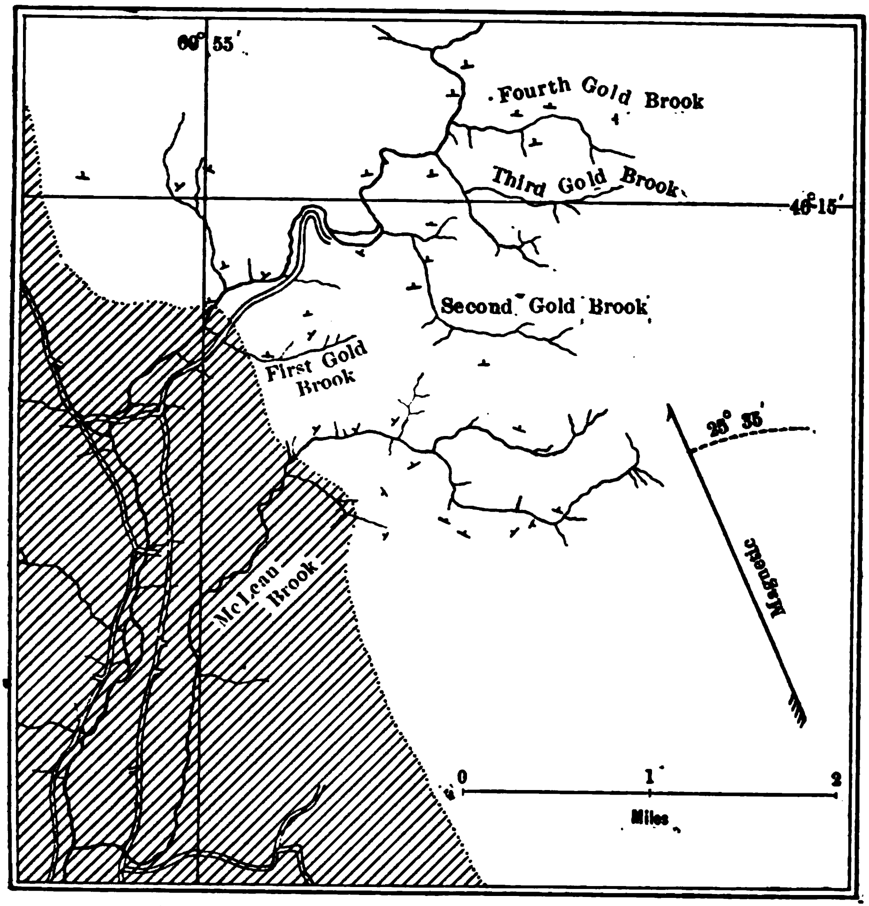

60° 55'
Fourth Gold Brook
Third Gold Brook
46° 15'
Second Gold Brook
First Gold Brook
McLean Brook
25° 35'
Magnetic
0
1
2
Miles

PLATE III.

Sketch map of part of Second Brook, showing the "Lizard Lode" and accompanying rocks, not drawn to scale. North of the Lode is schist with a few bedded veins. For a few inches south of it is the same rock, while from this point to the dike is hornblende syenite-gneiss The quartz porphyry dike is represented by diverted lines. South of this is schist, with other bedded veins. The solid portions of the lines show the parts of the veins which had been opened in 1898.

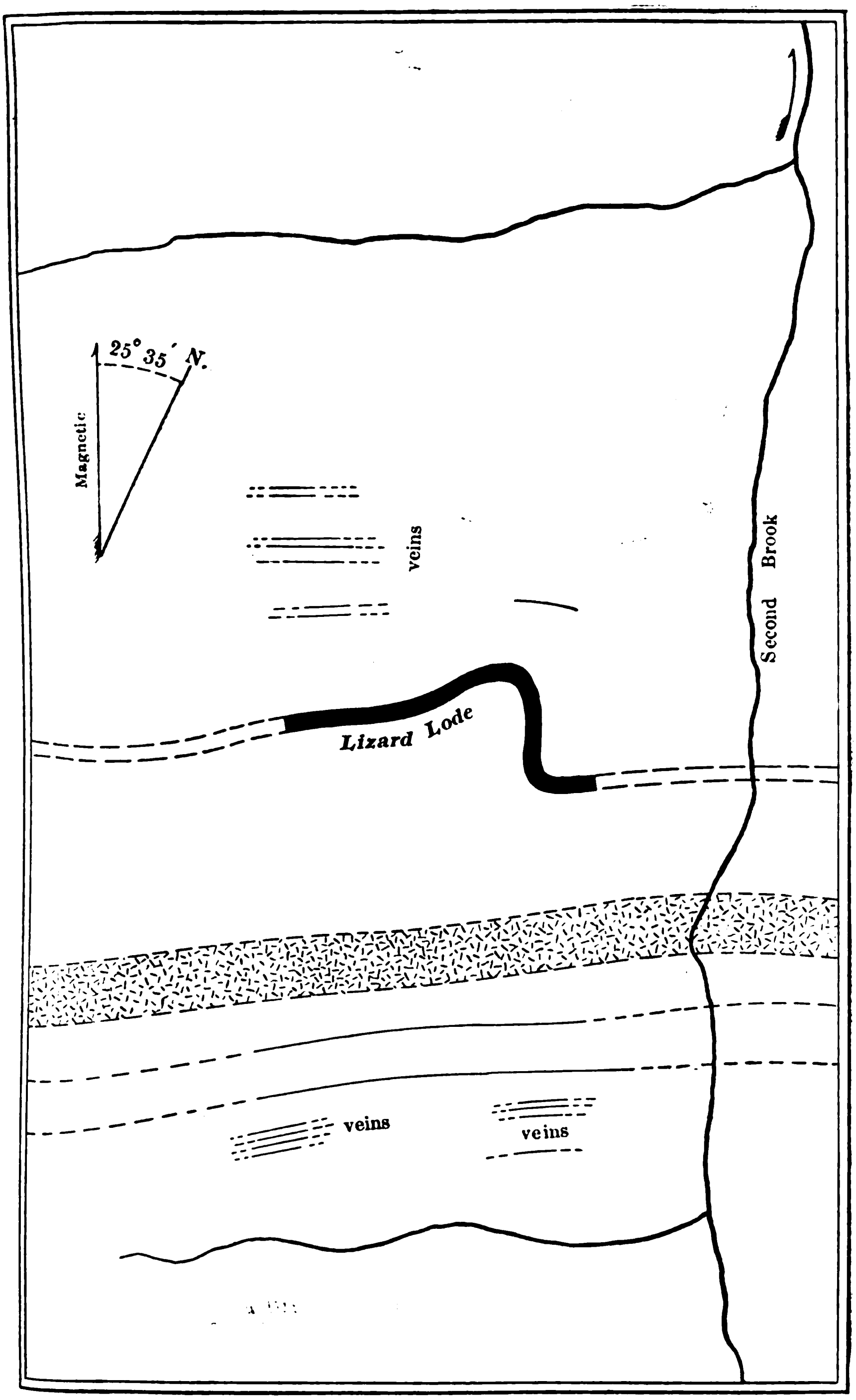
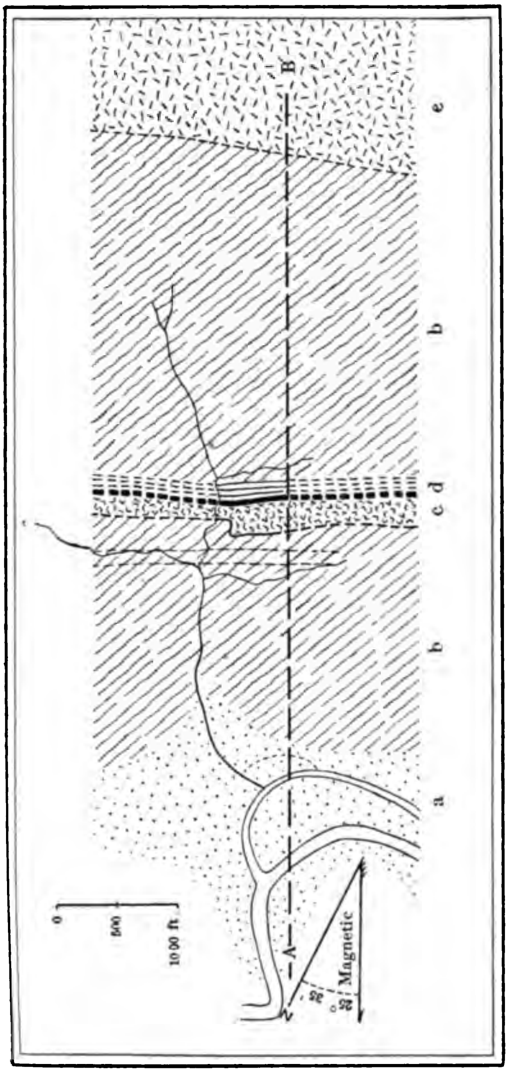

25° 35′ N.
Magnetic
veins
Lizard Lode
Second Brook
veins
veins

PLATE IV.

Figure 1. Map of Second Brook, showing the sequence of the rocks. (a.) alluvium ; (b.) schist ; (c.) hornblende syenite-gneiss, separated from the schist on the north side ; (d.) quartz porphyry dike, represented by heavy band ; (e.) granite, forming the core of the mass. Three bedded veins are shown in the schist just south of the dike.

Figure 2. Section of same, along the line A.—B.


0
500
1000 ft.
A
B
Magnetic
a
b
c d
b
e

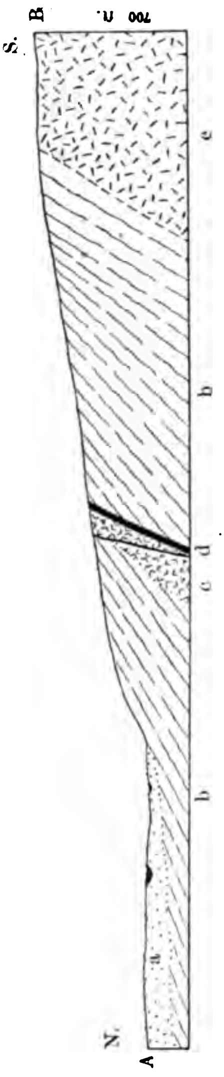
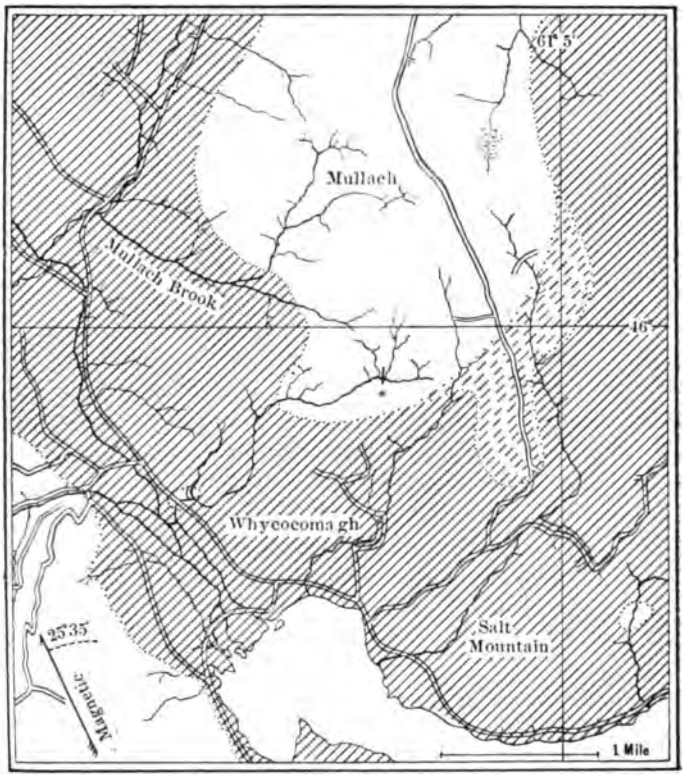

S.
B
700 ft.
N.
A
a
b
c d
b
e

PLATE V.

Figure 1. Map of the Whycocomagh region, altered from the map of the Canadian Geological Survey. The parallel lines represent the Carboniferous; those of open character north of Salt Mountain cover the area included in the Carboniferous in this paper.

Figure 2. Section along the line of the tunnel, marked on the map with an asterisk (*). 1, metamorphic limestone, containing some serpentine; 2, quartzite; 3, dark schist, grading into 2; 4, fissure vein of quartz, exposed in the stream bed north of the tunnel. The tunnel is shown by a heavy horizontal line, and represents 140 feet.


61° 5'
Mullach
Mullach Brook
46°
Whycocomagh
Salt Mountain
25°35'
Magnetic
1 Mile

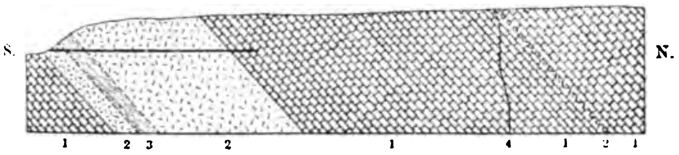

S.
N.
1
2
3
2
1
4
1
2
1

PLATE VI.

General map of the Cheticamp Region, altered from the map of the Canadian Geological Survey. The position of two copper deposits is shown by small circles and the letters, Cu. Two strikes and dips are given in figures, from observation ; the rest are taken from the above mentioned map, some of them agreeing with recent observations. The new road to the Galena Mine on Faribault Brook is drawn in without measurements and is approximate. The probable area of Schistose Rocks, north of Jerome Brook, is shown by a dotted line.

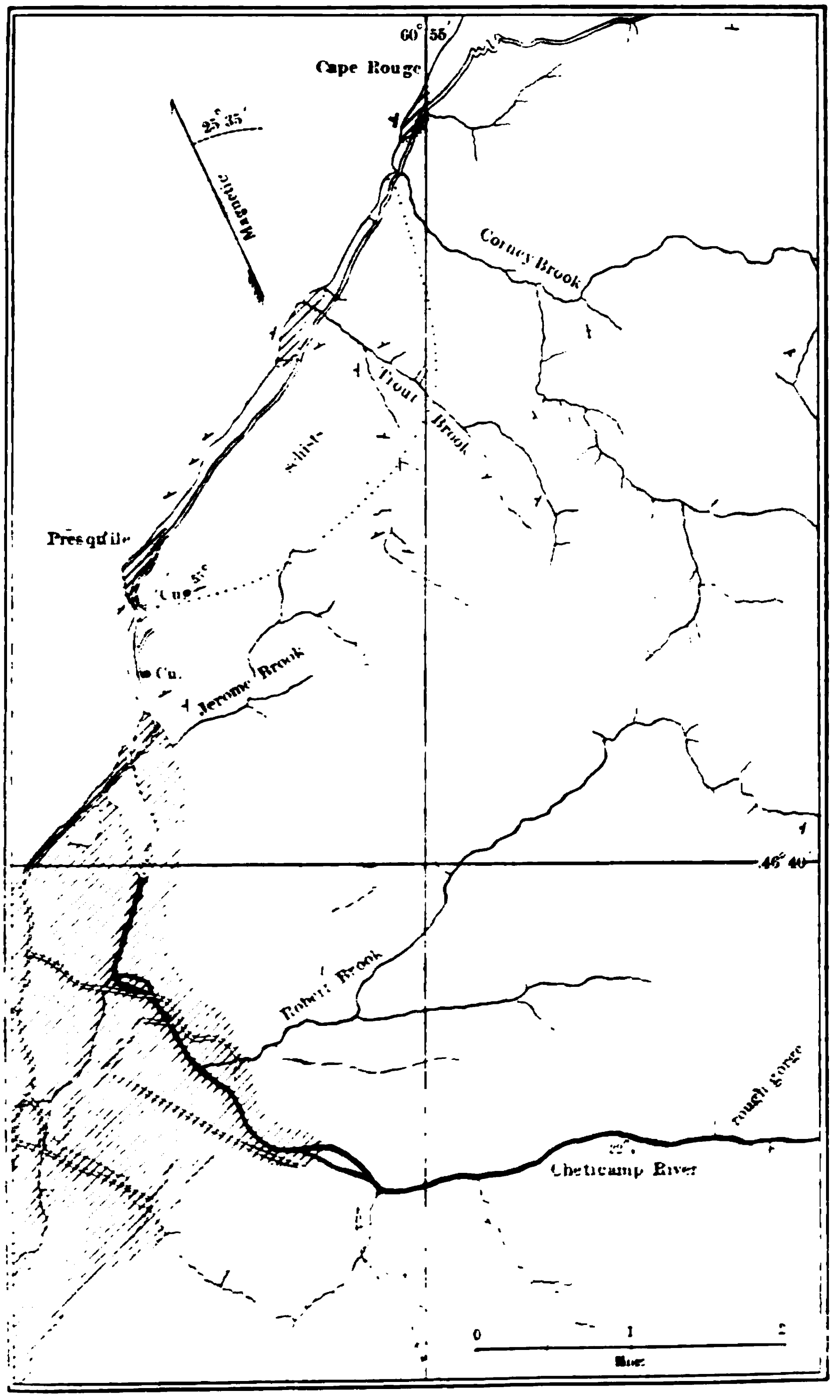

60° 55'
Cape Rouge
25° 35'
Magnetic
Corney Brook
Trout Brook
schist
Presqu'ile
Cu 35°
Cu.
Jerome Brook
46° 40'
Robert Brook
rough gorge
22°
Cheticamp River
0
1
2
Miles

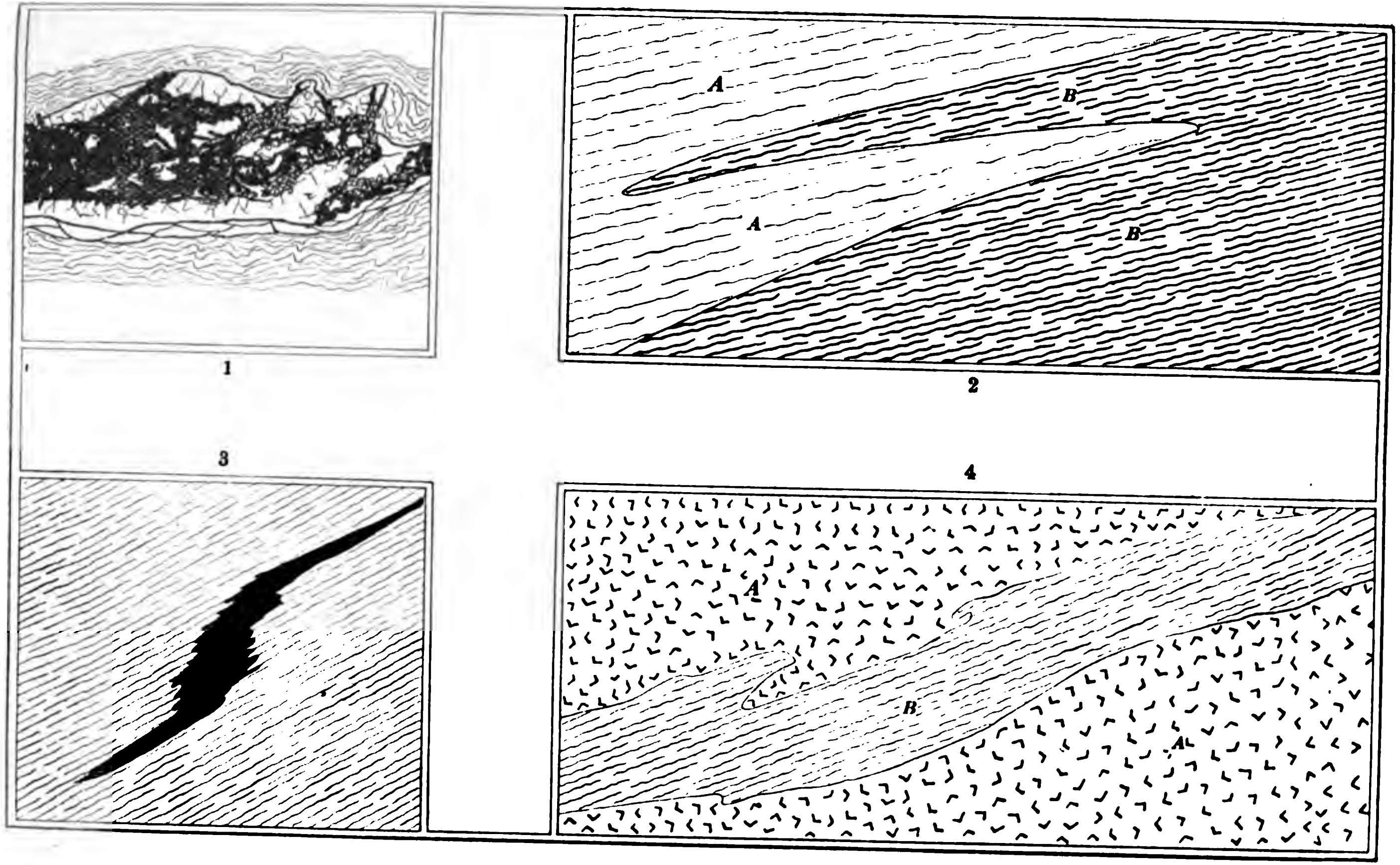
PLATE VII.

Figure 1. Section of quartz vein bearing galena, from the lower opening of the Galena Mine, Faribault Brook; enlarged. The outside portion is schist. Inside this comes quartz, often much cracked. The center is occupied chiefly by galena which, however, encloses many small pieces of quartz, and on its margins penetrates the outer quartz irregularly.

Figure 2. Contact of the two schists, eight feet below surface, lower opening, reduced, (A.) gray schist, (B.) blue schist. The inter-tonguing is caused by overthrusting.

Figure 3. Reduced section showing lens of galena cutting across planes of schistosity, lower opening.

Figure 4. Section of granitite, (A.) and schistose trap, (B) at old copper workings north of Jerome Brook, reduced.


A
B
A
B
1
2
3
4
A
B
A

REPORT

OF THE

DEPARTMENT OF MINES

OF

NOVA SCOTIA,

For the Year ending 30th September, [illegible]

[illegible]

[illegible]

REPORT

OF THE

DEPARTMENT OF MINES,

NOVA SCOTIA.

For the Year ending 30th September, 1899.

HALIFAX, N. S.:
COMMISSIONER OF PUBLIC WORKS AND MINES, QUEEN'S PRINTER.
1900.

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DEPARTMENT OF MINES.

REPORT FOR THE YEAR ENDED SEPTEMBER 30, 1899.

To His Honor SIR MALACHY BOWES DALY, K. C. M. G., *Lieutenant-Governor of Nova Scotia, &c., &c., &c.*

MAY IT PLEASE YOUR HONOR,—

I respectfully present herewith to Your Honor the Annual Report of the Inspector of Mines, containing an account of the progress of mining operations, together with statistical information compiled by him from official and other returns.

I remain,

Your Honor's obedient servant,

CHARLES E. CHURCH,
Commissioner of Public Works and Mines.

HALIFAX, *January 3, 1900.*

REPORT

ON THE

MINES OF NOVA SCOTIA,

BY EDWIN GILPIN, JR., A. M., LL. D.,

FELLOW OF THE ROYAL SOCIETY OF CANADA.

OFFICE OF INSPECTOR OF MINES,
HALIFAX, *December 29th, 1899.*

TO THE HONORABLE
CHARLES E. CHURCH, M. P. P., M. E. C.,
Commissioner of Public Works and Mines:—

SIR,—I beg leave to submit the following report on the Mines of Nova Scotia.

The following summary shows, so far as I have been able to learn, the mineral production of Nova Scotia for the year ending September 30th, compared with that for the year ending September 30th, 1898.

		Year ending Sept. 30, 1898.	Year ending Sept. 30, 1899.
Gold	oz	31,104	27,772
Iron Ore*†	Tons	31,050	16,169
Manganese Ore†	"	75	100
Coal raised†	"	2,281,454	2,642,333
Coke made†	"	42,000	55,484
Gypsum†‡		131,000	140,000
Grindstones, etc.§		38,000	50,000
Limestone†	Tons	24,000	32,000
Barytes		......	335
Tripoli and Silica		......	893
Copper Ore		......	400

---

* Not including imported ore.
† Ton of 2,240 lbs.
‡ Amount exported.
§ Value in dollars.

During the past year there have been surveys made at various points in Inverness County, and in Cape Breton and Richmond Counties. A number of Copper leases have been surveyed at Cheticamp, Dalhousie Mountain, Oxford, New Lairg and Wentworth. Surveys have also been made in the following gold districts:—Sherbrooke, Wine Harbor, Caledonia, Chezetcooke, Renfrew, McKay Settlement, Uniacke, Montagu, Block House, Mill Village, etc.

During the summer a set of specimens, representing the minerals of the Province, was collected, and prepared for the Paris Exhibition. The exhibit, the collection of which involved a good deal of traveling and correspondence, is a complete and representative one. The understanding as to the method of exhibition was that the minerals of Canada should be represented in one collection, and your Hon. Government provided the specimens as an assistance to the Geological Survey which was entrusted with the Canadian exhibit.

During the year the Agricultural, Engineer's, and Education staffs were moved into new offices in the Burns & Murray building. Advantage has been taken of this change to enlarge the Mine's office space. The additional room will, it is expected, meet the demands of the increasing business of the Department for some years to come. A floor of the Burns & Murray building has been prepared for the Provincial Museum, which is being removed from its old quarters in the Dominion Building. It is proposed to make the Museum a collection of the natural products of the Province.

The usual examinations were held for granting certificates of competency to managers and underground officials.

The following list gives the names of the successful candidates:—

COMPETENCY—OVERMEN.

Peter Murphy	Joggins Mines,	Cumberland Co.,	July 26, 1899.
Kent Foster	Springhill	"	"
A. C. Fullerton	"	"	"
Patrick Prendergrast	Port Morien,	Cape Breton Co.,	"
Dan. K. McDonald	Bridgeport,	"	"
Daniel McCuish	"	"	"

COMPETENCY—UNDERGROUND MANAGERS.

Duncan McDonald	Old Bridgeport,	Cape Breton Co.,	"
Alex. E. McPherson	Springhill,	Cumberland Co.,	"
W. A. Harris	"	"	"
John Hargreaves	"	"	"
Chas. Martin	"	"	"
Geo. W. Burden	"	"	"
Geo. C. Wright	Westville,	Pictou Co.,	"
Alex. Sutherland	"	"	"

George Mills	Westville,	Pictou County,	July 26, 1899,
Arch'd. McLellan	"	"	"
Wm. Gray, Jr	"	"	"
Dan. A. Ferguson	Bridgeport,	Cape Breton Co.,	"
Rory Gillis	"	"	"
Neil McDonald	"	"	"
John J. McNeil	Glace Bay,	"	"
Thos. Matheson	Sydney Mines,	"	"
Hugh Dickson	"	"	"
George Slaven	"	"	"
John Ling	Thorburn,	Pictou Co.,	"
H. H. Cameron	"	"	"
John McSween	Joggins Mines,	Cumberland Co.,	"
James Nearing	Port Morien,	Cape Breton Co.,	"

COAL TRADE.

The returns of Coal sold during the year 1899, show, in comparison with those of 1898, as follows:—

	1898.	1899.
Nova Scotia	667,252	729,477
New Brunswick	266,789	327,504
P. E. Island	93,241	106,755
Newfoundland	62,051	66,881
Quebec	944,160	1,029,288
West Indies	......	6,044
United States	98,027	153,188
Other Countries	3,877	......

The production was 2,642,333 tons compared with 2,281,454 tons in the year 1898.

The total sales were 2,419,137 tons compared with 2,135,397 tons in 1898.

There is an increase in the sales to all points. The exports to the United States steadily increased during the summer and will be continued during the winter.

CUMBERLAND COUNTY.

During the past year the production was 437,121 tons compared with 352,270 tons during the preceding year. Of this amount 369,533 tons were furnished by the Springhill Mines, and the balance by the Joggins.

At the latter mine many improvements were made in order to put the mine in good order. It is expected that the pumping plant now installed will keep the mine permanently free of water.

At Springhill, the development work has been steadily pushed and large reserves of coal are now in sight. The exploratory work carried on to the south of the town has very materially increased the area of workable coal known to exist in that section.

PICTOU COUNTY.

There have been no operations calling for special notice. The mines have worked more steadily than usual and the production was as follows:—Acadia, 258,680 tons; Intercolonial, 201,556 tons, as compared with 198,939 tons and 222,386 tons, respectively, during the year 1898.

I beg to append herewith report of Mr. Malcom Blue, Deputy Inspector, on the mines of Cumberland and Pictou Counties as visited by him during the past season.

SPRINGHILL, Oct. 2nd, 1899.

E. GILPIN, ESQ.,
Deputy Commissioner and Inspector of Mines
for the Province of Nova Scotia.

DEAR SIR,—

It is my privilege to submit to you a condensed report on the coal mines of Pictou and Cumberland Counties, for the year beginning 1st Oct. 1898, and ending 30th Sept., 1899.

PICTOU COUNTY.

DRUMMOND COLLIERIES, WESTVILLE.

The main slope is now sunk a distance of 4,858 feet, and has been worked in two lifts, Nos. 12 and 13, the former having been finished a few months ago. The seam as now worked is eight feet thick and lies at an angle of 16°. The greater part of the coal mined during the year came from No. 12 lift. The levels were driven to the boundary, and partly drawn back last year. The north side was drawn by the system known, as "longwall retreating," for a distance of 800 feet very successfully.

The south side was drawn for the same distance by the bord and pillar system, but, owing to the enormous pressure at this depth the system was changed to longwall. The main slope was driven last year to the 13th lift, or a total distance of 4,600 feet. At this point a fault or displacement of some 35 feet, vertical, was met. Level No. 13 was turned off on the south side and driven this year a distance of 1,600 feet on the longwall system.

At a distance of 1,060 feet from the slope bottom a balance is now driving from this to the No. 12 lift. To prove the position of the fault a place, called the backairway, was started on the north side of No. 12 lift and driven down parallel with the main slope a distance of 400 feet.

The fault was crossed in this place and only showed about 4 feet 6 inches displacement. A pair of levels have been turned off north at

No. 13 and are now being driven. The airway is being continued down to No. 14, to connect with the main slope, which is driving through the fault and is now down 200 feet below No. 13 lift. The coal below the trouble is of excellent quality improving with depth. About 1,500 feet from the surface an old level, which had been abandoned for twenty years, has been cleaned up and retimbered for several hundred feet and a number of pillars have been drawn. The coal being hard, roburite had to be introduced for blasting purposes A sufficient current of fresh air was taken in from No. 4 slope and the return air from the lower workings shut off making this a separate district.

At No. 9 lift a tunnel, 1,000 feet long, connecting the main seam with the Scott pit has been cleaned up and retimbered for 700 feet, and preparations are now being made to take all the Scott pit coal out through this tunnel and up the No. 2 slope of the main seam.

SCOTT PIT.

The shaft is 200 feet deep and a slope extends down some 3,000 feet at an angle of 12°. The seam is 8 feet thick and improving in quality to the deep. It is worked on the bord and pillar system.

This mine which had been idle for some time after the gas explosion, caused by a lightning stroke, was again opened up and the slope extended down about 900 feet. Two pairs of levels were turned off to the south, each pair about 400 feet apart. They have been driven in 500 feet. A balance is now driving from the lower levels to connect with the upper levels which are at present idle. The use of explosives has been discontinued in this mine since last July on account of the large quantities of explosive gas given off continually.

The tunnel driven some time ago from the main seam to this mine was connected last June, and is now being got ready for the transport of the coal out to the main seam slope. This will very greatly concentrate the handling of the product. I find the timbering and ventilation at these collieries good, and approve of the system of longwall working.

No. 4 slope has been idle during the past season.

ACADIA COLLIERY, WESTVILLE.

This mine is now sunk a distance of 4,500 feet at an angle of 26°, and is worked in two lifts, Nos. 9 and 10. The seam worked is 7 feet 3 inches thick. It is worked on the longwall retreating system. On the north side of No. 9 lift the coal has been extracted some 400 feet, and there still remains on this side a pillar of coal 500 feet by 75 feet inside the slope pillars. On the south side they have retreated about 600 feet, leaving a pillar of coal 1,800 feet by 80 feet to be withdrawn after they move to No. 10 lift.

On No. 10 lift the north levels have been advanced 200 feet. They have not been worked since January, 1899. Those levels are now driven 2,200 feet, and the following places have been driven from them to No. 9 level, viz., main slope and travelling way, and a chute was also put through and two more are now being driven.

The south levels have been advanced 1,150 feet during the year making a total of 3 300 feet. It is expected that they will go some 1,200 feet further. At 1,600 and 2,000 feet, respectively, jigs have been driven up to No. 9, and further in there are three more jigs now being driven. This lift is being rapidly prepared for the main workings. The coal is now raised to No. 9, via the sinking slope by an engine driven by compressed air stationed 200 feet south of No. 9 lift

During the year the management has done considerable work opening up airways and returns, thereby improving the efficiency of the ventilation, and the mine is now in very good shape. A pump 13 inches by 12 inches, with a capacity of 50 gallons per minute, and a vertical duty of 750 feet, driven by compressed air, has been placed at No. 10 lift. Heretofore no water was let down to this lift.

MCGREGOR PIT, ALBION MINES.

This slope is 5,000 feet deep and is worked in three lifts, viz, Nos. 5, 6 and 7. The coal is 7 feet thick and is worked on the bord and pillar system. East of No. 5 lift a balance is worked with bords driven some 600 feet east and west. Preparations are now being made to extract the pillars. No work has been done on the west side or to the rise of this lift.

A pair of levels have been driven east and west of No. 6 lift. The west levels are advanced 1,300 feet, with no workings to the rise.. The east levels are driven 1,700 feet, and a balance turned away at 1,500 feet from the slope bottom. A pair of levels have been driven west of No. 7 lift, a distance of 250 feet. It is probable that these levels are being driven on the side of a basin, and the seam being the under one of three the mining of the coal at this depth will be interesting.

THIRD SEAM SLOPE, ALBION MINES.

Two seams are worked in this slope which is 1,700 deep, viz., the Third seam, and the Cage pit seam, they are 12 feet and 11 feet 6 inches high, respectively. They are connected by a tunnel at the slope bottom. The levels and bords are driven but 7 feet high, and the top coal is got when the pillars are being extracted. The new lift in the Third seam has been sunk to a depth of 900 feet, and levels turned away east and west and driven 950 feet and 2,112 feet respectively, with no workings to the rise on either side. At a distance of 1,350 feet west a tunnel has been driven to connect with the Cage pit seam in the borehole sinking. These levels are lower than the bottom of the Foord pit. The old workings below the iron doors, Cage pit seam, which was connected with the Foord pit, have been cleaned out to a depth of 528 feet and levels have been driven east and west about 800 feet and a balance turned away on each side.

These levels were started in places driven from the Foord pit over 20 years ago. Preparations are now being made to introduce a system of endless rope haulage in the new levels of the Third seam sinking. The ventilation and timbering in these mines is very good.

SIX FEET SEAM, VALE COLLIERY, THORBURN.

Work at this mine has been very slack the greater part of the year, consequently the workings have not been much advanced. On the west side of the main slope, which is 2,400 feet deep, No. 3 balance is driven a distance of 360 feet but is now idle. No. 4 balance was driven up 160 feet when coal thinned out and it was stopped. A slant was started on this side to the dip and is now down 200 feet. The coal here is increasing in thickness and much improved in quality.

On the east side the levels at foot of the engine way have been driven a distance of 1,250 feet. There are three balances in this level. No. 1 is up a distance of 400 feet and has 12 bords. No. 2 is driven 370 feet and has 8 bords. No. 3 balance is now driving. The north dip has again started, and is now down a further distance of 400 feet, or a total of about 1,500 feet, at an angle of 5°, beginning 560 feet east of slope bottom.

The hoisting slope has been newly timbered, and new sills laid under the road from the bottom to top. Airways have been retimbered, and an overcast, of wood, has been set in at the 2,400 feet level. This mine is in good order and well ventilated.

CUMBERLAND COUNTY.

NO. 2 SLOPE, SPRINGHILL.

This mine is worked from the 2,400 feet level. The principal work done during the year has been the extension of levels east and west. The former has been extended 749 feet, making a total distance of 3,498 feet. At this point, what is known as the Aberdeen roll or trouble, was encountered, and 140 feet of rock tunnel driven, striking some coal at this point.

The west level has been extended 1,452, feet or a total distance of 2,904 feet, with two chutes to the rise. A tunnel has also been driven from this level to the underlying seams, tapping several small veins from 1 to 4 feet thick. The tunnel has now advanced about 550 feet and it is the intention of the management to drive some 300 feet further to a seam of coal supposed to be 8 feet thick.

The pillars from No. 1 seam, or what is known as the fire district, are being rapidly drawn below the 800 feet level.

The foundation has been started of a double inlet Capelle fan, diam 15 feet 0′; width, 5 feet 0′: inlet orifice, 8 feet 8½ inches; calculated at a speed of 240 revolutions to deliver 150,000 c. ft. of air per minute, at a water gauge of 9 inches.

An automatic cut off engine, 20 inch cylinders and 18 inch stroke, direct connected to fan shaft, is now being built on a concrete foundation, and it is expected that the fan will soon be in running order as part of the machinery is already on the ground.

NO. 3 SLOPE, SPRINGHILL.

This mine is 3,400 feet deep, lies at an angle of 30° and is worked in three lifts, viz., 1,900, 2,600 and 3,200 feet levels. On the 1,900 feet level the extraction of pillars has been carried on very successfully on both east and west sides.

On the west side of the 2,600 feet level, the levels have been advanced 2,805 feet, making a total distance of 5,511 feet. This is a solid block of coal 700 feet by 10 feet with only the openings necessary for ventilation. The east level of the under seam has also been extended a considerable distance.

On the 3,200 feet lift the east and west levels have been advanced 693 feet and 1,700 feet respectively.

A tunnel has been driven on the east side, about 170 feet to the under seam. Here the coal is about 4 feet thick and of superior quality. Considerable improvement has been made in the pipe bord and fanway. During the year they both have been stripped and resecured with iron booms the entire distance of 600 feet from the 2,600 feet to the 3,200 feet level.

An overcast built of brick and cement, 70 feet area, has been set in at the 3,200 feet level. The ventilation is very good.

JOGGINS MINES.

NO. 2 SLOPE.

No mining operations of any note have been carried on at this slope during the year. The management were engaged pumping water out, driving the lower end, and retimbering the top part of the pipe bord, preparatory to the installation of the new Jeansville pump, now placed at the 2,400 feet level.

The pump has 30 inch cylinders, 36 inch stroke, 50 strokes per minute, steam pressure 40 lbs. Its capacity is 500 gals. per minute with a vertical duty of 600 feet.

New 6 inch steam pipes have been laid from bank to 2,400 feet level, and covered with Asbestos. The discharge pipe, 10 inches in diameter, is laid up to the 600 feet level, whence the water is carried through a drain to the shore.

Sinking operations have been started, and in a few months it is expected the total output will be greatly augmented. Altogether matters are looking much more favorable than they were at this period last year. The want of an adequate supply of feed water for both slopes has been severely felt this autumn, but arrangements have been made to remedy the evil next year.

NO. 3 SLOPE.

This slope is 2,500 feet deep, and is worked in two lifts, 1,900 and 2,500 feet levels, on the longwall system. During the year some coal was taken out of the 1,700 feet lift, but No. 3 balance of the 1,700 feet lift has been extended to the 1,900 feet lift and all the top lift coal taken out on this level.

Two new balances are being driven from the 2,500 feet lift, one on the east and one on the west side. The return airway has been shortened about one quarter the distance, and put in thorough repair.

The fault encountered lately on the west side of the 2,500 feet section has been pierced, and the seam is now being rapidly developed inside of it.

The water from the lower part of this mine is handled by tanks, and is emptied at the 1,900 feet level and conveyed thence by drain to No. 2 slope, where it is pumped to what is known as the shore drain, about 600 feet from the surface. Those drains have been thoroughly overhauled during the year. The ventilation is good

SMITH'S MINE, MACCAN STATION.

In the early part of the year Mr. J. T. Smith, owner and manager employed from 4 to 10 men. The main slope was sunk an additional 60 feet and levels turned away north and south. A boiler of 50 H. P and additional buildings have been added to the plant. The management then passed to Mr. S. J. Harrison, who is now pushing the south levels and driving places to the rise. On the north side, about 200 feet from slope, an upthrow of several feet was encountered and has been successfully pierced. About 20 feet further on a downthrow has been struck through which they are now tunnelling.

SCOTIA MINE, CHIGNECTO.

The owners of this mine, Messrs. Blenkhorn and Ripley, are sinking a new slope about 700 feet west of the one they worked last year.

They are now down about 180 feet, and have two places turned off west and one place east. They expect to reach and turn off their bottom levels in a few days.

Connections are to be made with the old slopes whose levels have been extended westerly about 250 feet during the year.

The old slope was abandoned to shorten the handling of the product and will be used as an airway in future.

CHIGNECTO MINE.

Mr. Jas. Baird, manager, has 2 to 5 men employed sinking a new slope to the eastward of where he mined last year.

The slope is now sunk a distance of 140 feet and levels have been turned off east and west. The coal looks good and is to be worked 8 feet high.

The old slope was abandoned because the coal had been all got out. It was sunk in a pillar that had been left near the surface of the old works.

JUBILEE MINE.

This mine did considerable work last season, employing from 4 to 8 men.

The levels on both sides have been extended and places driven uphill.

But so far this season no work has been done except keeping mine clear of water.

GENERAL REMARKS.

There were two fatal accidents and sixteen persons seriously injured in the coal mines of this district during the past year.

The more serious of those accidents did not occur at working faces, but were distributed among the various occupations in the mines.

I find the working places well supplied with timber, and the workmen are continually cautioned to have them correctly set near the faces. The ventilation throughout is fair, and in most mines may be termed efficient.

The modes of working coal are bord and pillar, and longwall, and are well adapted to the different collieries where they are in operation. A large per centum of the coal is won. The slopes, levels, balances, airways and returns are well timbered and secure. The mines I am pleased to state are in good condition.

I have the honor to be,

Your obedient servant,

M. BLUE.

TIMBER USED AT THE SPRINGHILL COLLIERIES FROM OCT. 1ST, 1898, TO SEPT. 30TH, 1899.

BOOMS:	14′ x 10″	14′ x 6″	12′ x 9″ x 10″	10½′ x 9″	10′ x 6″	10′ x 3″	split
	434	8626	2055	10721	22556	8220	
PROPS:	12′ x 5″	10′ x 5″	5½′ x 5″				
	23676	33495	34469				

Pine	5,031	Feet.
Plank	81,420	"
Boards	192,666	"
Scantling	148,000	"
Spruce Timber	52,000	"
Roller Wood	1,375	"
Hard Wood	55,000	"
Pit Pinning	1,297	Dozen.
Slabs	29,397	"
Cap Pieces	50,430	"
Dynamite	3,539	Pounds.

TIMBER AND EXPLOSIVES USED FROM 1ST OCT., 1898, TO 1ST OCT., 1899.

MINE.	PROPS.	BOOMS.	EXPLOSIVES.				
	Feet.	Feet.	Powder, lbs.	Flameless Powder lbs.	Dynamite, lbs.	Roburite, lbs.	Squibs, doz.
Acadia	632,376	371,394	....	....	....	....	....
Albion	162,000	39,000	....	17,775	....	....	26,000 feet 4 Fuses.
Vale	25,176	41,836	24,942	....	....	....	30,000 feet 25 Fuses.
Drummond	1,127,490 and Chucks	402,934 Mine Sleepers 23,486 pieces	....	....	....	2,087	....
*Joggins	32,926 feet 8 props	6,545 Booms	500	139,858 4 feet Butts.	....	....	....

*No flameless powder used.

was found that it must have ignited in the vicinity of the pump as it was seen that the force of the explosion came up from that district. It appears that Dan Marlin, one of the overmen, who was employed on the west side workings where there was a night shift on, came to the stables to put in a horse, and reported that he smelled smoke, and thought that there was fire somewhere about there. This was at 1 o'clock. About 3 o'clock as some of the men were returning from their work they also smelled smoke, and then Marlin told Madden, the bottomer, to go and get Johnston, the Underground Manager, and tell him that he smelled smoke and thought there was fire. Johnston went to pit-bottom, and then sent for Mr. Brown who sent for John Johnston and Neville.

Thomas Johnston immediately proceeded with a crowd of men whom he met about the pit-bottom and took buckets in order to put out the fire if they could discover it. They followed the intake air in the west level and then down the west deep, and in coming up towards the pit bottom on the travelling road between No. 3 and No. 2 levels the explosion caught them. Eleven men lost their lives, including the Underground Manager, Thomas Johnston, viz.:—Donald Martin, John Doyle, Alex. McDonald, Stephen McOrmick, Roderick McDougall, Albert Grant, John Doyle, Jnr., Neil McDonald, Malcolm McAulay and William Simpson.

Thos. Brown, John Johnston, and Thomas Casey, Overmen, were the first to go in search of the others and found that there was an explosion, and discovered all the bodies, but that of Donald Martin, whose body was not recovered until the 26th, ten days afterwards. When found they were in two groups, about fifty feet apart. Donald Martin's body was recovered in a sitting position leaning against the coal in No. 2 level about ninety feet from the others. It was quite evident that they died from after-damp, as some of them were found to have their coats around their faces, and Mr. Brown when he first went in heard some of them moan but owing to the density of the damp could not reach them. The Deputy Inspector arrived after this and with a rescuing party had the bodies brought to the pit-bottom. After that Johnston, Hudson and Neville went down and discovered the fire burning in the coal about the pump and pipe deep.

It was thought that the fire could be extinguished by throwing water on it, taken from the lodgment, but this proved a failure. The next step taken was to flood the level below the pump and reverse the air. This was done, but a few days after it was found that something more had to be done in order to save the pit as it was quite evident from explorations that were made, that the fire was gaining headway. It was then agreed that steam be immediately forced from the surface into the burning district in order to prevent an explosion, and at the same time to go on with the flooding of the deep district of the pit. In less than twenty hours after the steam was turned on, it had such effect that it was thought that the fire was entirely out, and preparations were made to seal off the section where the fire was so as to prevent the black-damp from coming in contact with the miners who were going to work in the west level district. This was done and in a short time all the miners were at work again in two shifts, night and day, and after all they lost very little time. However, it was found that the fire was still burning, and the district had to be submerged. Finally the fire was extinguished on the 16th day of September. Since then the unwatering of the mine has been going on rapidly, and the water is at this date lowered on the pavement 400 feet, and is expected to be all out of the pit by the first of May next.

A very careful investigation was held by the Coroner, but no definite cause could be assigned for the fire. The pumpman, Leopold, the only person in the pump house that night, declared he had no fire under the pump, and that everything was all right when he left his post. The evidence, however, clearly pointed to the pump house as the point where the fire started.

The verdict exonerated the management from blame. I may add here that the Cape Breton mines have been specially examined by the Deputy Inspectors this summer, and recommendations made to the managers, as to stemming, stone stoppings, ventilation, etc., which have been adopted, and will assist it is trusted in meeting the conditions peculiar to mines being rapidly opened on a very extensive scale.

I append the report of Mr. P. Neville, Deputy Inspector for the Island of Cape Breton.

E. GILPIN, Esq.,
Deputy Commissioner and Inspector of Mines.

DEAR, SIR,—

I beg leave to forward to you a short report on the coal mines in the Island of Cape Breton for the year ending Sept. 30th, 1899.

CALEDONIA MINE.

This colliery worked satisfactorily up to the morning of the 16th of June, when an accident occurred by which eleven brave men lost their lives, by after damp, caused by an explosion of gas. I will not go into the details of this disaster as luckily you were on the ground, and visited the mine the day previous in company with the Underground Manager, Mr. Thomas Johnstone, and myself, and remained at the colliery until the mine was made safe for the miners to again resume their work. The flooding of the district where the fire had been burning, was accomplished on the 16th of September, and the fire completely extinguished. After a day or so the unwatering of this submerged district was commenced, and it is being rapidly pumped out.

A shaft, 12 feet by 7 feet, is now being sunk beside the Little Glace Bay brook, to reach the mine or what is known as the old pump level. It will be about 260 feet deep, and is intended for a water shaft and permanent pumping station for the colliery. A new screen has been put in at this colliery for screening into nut, pea and duff from ¾ in slack. Two screens each 8 feet long by 5 feet wide, are placed, one above the other; the top screen being of ½ inch netting, and the lower one of ¼ inch mesh. These screens are hung loosely by a hinge, at an angle of 30°, and are rapidly knocked up and down by four cams which are fast to a revolving shaft at each end of the screen. The drop on each cam is about two inches and it has proved efficient.

The levels and deeps in this mine have all been pushed steadily forward. On the west side, from the top of an old room to the rise, a place was driven to the surface which was made into an excellent travelling road for the workmen. The old stables in the east deep have been abandoned and new stables built to the rise in the west level.

HUB COLLIERY.

The underground workings of this mine were abandoned in the month of May last. On the 17th day of May, I visited the pit and found it to be in good condition, well timbered, pillars and rooms in good order, and surveyed to the extreme points of levels, headways and deeps and permanent marks put in. A plan of the same can be seen in the company's office. The distance from the pit-bottom to the face of the deeps is 2,600 feet, 1,400 of this is under water, and the depth or thickness of the roof stone at the face from the bottom of the sea to the top of the coal is 194 feet. The coal looked better and much harder, as it was worked to the deep at this point, than in any other part of the pit, also the roof stone is much stronger, and the splint or top coal thinner, being six inches in thickness to the rise and only two inches thick where the deeps ended.

INTERNATIONAL COLLIERY.

This mine has worked fairly well during the year. Levels and headways have been extended and rooms broken off. The endless haulage was extended 1,000 feet further in the south level. A borehole, 12 inches in diameter, was put down eighty feet from the present boreholes in order to further increase facilities for pumping. Two inclines were built from the bottom of the coal screens to the top of the bank head, a vertical height of forty feet, in order to bank screened coal during the winter months, and about 40,000 tons were banked. Two boreholes are at present being put down to the Phalen seam from the surface, at this colliery, for the purpose of pumping from the Phelan seam, Dominion No. 1, and the water from Reserve. As before mentioned in my reports this mine is kept in good order, timbered well, with good ventilation, and the travelling roads are in good condition.

DOMINION NO. 1 COLLIERY.

Two 1¼ inch bar screens were put in place over the shakers, which carry all the large coal to the conveyors, leaving only the small coal to pass over the shaker-screens. This is an improvement, as it lessens the weight on the shakers, and prevents them from breaking, and divides the screening. The three engines which were running the screens, picking belts, and conveyor. have been replaced by a 14 inch by 24 inch engine, which is doing all the work with rope drive, and is giving satisfaction. A new Babcock boiler has been put in place, and the boiler shed made large enough for another boiler if required. A large addition has been built on to the compressor house which is to hold the Bridgeport compressors.

A 500 sixteen candle power, dynamo, made by the General Electric Co., has been put in. The pit-bottom haulage engine room, and the stables. are lighted by electric light, also the bank-screens, engine house, blacksmith, and carpenter shops, office, and railroad sidings, at pit and station house. The eight feet Murphy fan, that was in use at Old Bridgeport, has been erected here, and is now ready to assist the other when required. An engine house has been built, and a powerful engine placed therein for the purpose of hauling coal from the angle deep. Two boreholes have been put down from the surface to the top of this deep and the endless haulage rope put in by which this engine is to haul the deep coal from under the sea. The deep has been driven over 2,000 feet. The north deeps have been driven 800 feet, and are now down a distance of 5,600 feet from the shaft. No. 5 south levels are now in a distance of 2,440 feet from the south deeps, and No. 4 is in 2,210 feet. No. 2 north levels are in a distance of 1,832 feet from north deeps. No 3 levels are in a distance of 845 feet, and No. 4 are in 744 feet.

In July last a section of pillars was being drawn in No. 3 district south. Owing to there being so many pillars extracted at the same time it was found that a creep was being brought on. The number of hands drawing the pillars was reduced, pack blocks were put in and the creep checked. The pillars since that operation are taken out in smaller sections, which proves more satisfactory.

RESERVE COLLIERY.

A pair of new slopes were opened up at the crop of the coal on the east side of what is known as Landregans Marsh, and have been driven a distance of 1,050 feet to the dip of the seam. A road has been built from the mouth of this slope to the screen bank at Reserve, a distance of 4,000 feet, six hundred feet of this being trestle, some of which is 45 feet in height. There is a double track on this over which the coal is hauled by the endless rope haulage, which is over 5,000 feet in length. New machinery has been added to the plant for this haulage. The old common bar screens have been replaced by new screens the same as those in use on the Caledonia bank.

In the pit, the water level, going towards Dominion No. 1, has advanced 1,522 feet. The French or east slope deeps have been driven 640 feet, and levels turned off. The Main or west slope deeps have been driven into the Old Bridgeport deep workings, and the coal taken to bank through the above mentioned slope. Three new air crossings have been built in the new slope in order to give each section a separate return. The air or fan shaft has been enlarged from 10 by 6 feet, to 10 by 10 feet. The number of feet of haulage rope now in use at this mine is as follows:

Main slope	13,500
French do	12,500
New do	16,080
Total	42,080 feet.

BRIDGEPORT COLLIERY.

In December last this colliery was dismantled, and the plant taken to Dominion No. 1, and Reserve Collieries. However the underground workings are operated from Reserve mine, and it is under the same working. The workmen from Lingan and Bridgeport, as usual use the old travelling road to go to and from their work. This is kept in fair order.

SYDNEY MINES.

During the year there has not been any material addition to the surface plant, except a short branch railway laid from the main line to the fitting shops to facilitate the transport of heavy material to the pits. The new Jubilee shaft having passed through No. 3 seam has reached the No. 4 seam at a total depth of 649 feet from the surface. Explorations have been made in both seams. The colliery as usual has worked steadily during the whole year. The main deeps north and south have been extended 600 and 550 feet respectively. Two and a half acres of pillars have been extracted successfully, and 1,650 feet of longwall face is being opened out in a district at the extreme deeps of No. 2 north. The coal on this side of the pit is increasing in height. Two Northy Duplex, pumps each 5¼ inches by 3½ inches by 6 inches have been placed in the south side. one, 3,000 feet, the other 6.300 feet from the pit-bottom. These are worked by compressed air and pump the water from the face of No. 4 deeps to the main sump at the pit-bottom. The ventilation all through this pit is good: travelling roads kept in good order, timber put in where required, and the pit in general kept in good condition.

NORTH SYDNEY MINING CO.

A new slope was driven to the dip about 200 feet from the crop, on a seam four feet thick, supposed to be No. 4 seam that the Jubilee shaft reached when sunk. Work at this slope ceased in January last, and again the old place at the shore was re-opened, and since then a few men have been at work mining and shipping coal. The levels were extended 372 feet, and rooms broken off. H. Dickson is looking after the working of the pit, and Alex. G. Hamilton, Esq., is agent for the Company.

BROAD COVE MINE.

During the year little has been done at this mine. Some dredging was done in May last and a few cargoes of coal shipped from there in small vessels. This ended in June last. About the 1st of September, fire was discovered by the manager, Mr. Hugh Campbell, in a crosscut between the level and the inside room, in some slack coal and fire clay, that lies in a heap. It is supposed that the fire originated from spontaneous combustion. All the openings to the pit were at once closed up, and the fire sealed off, so that by this time the fire is supposed to be extinguished.

NEW CAMPBELLTON COLLIERY.

The levels have been extended north and south, and instead of working the coal as formerly, the rooms have been driven at right angles from the level 36 feet wide, and a road placed on each side of the room 5 feet from the pillar. The middle of the room is packed with the refuse of the mine, thus keeping the air to the face of the working places. The coal is taken down out of these rooms by means of a rope running through a pulley wheel opposite each road. The full car going down on one side of the room brings the empty car up on the road on the other side of the room. This system has been found to work very satisfactorily. The coal is then taken out on the levels to the landing by horses. The pillars are left 18 feet thick and the roads being so close to them make it easy to have the pillars drawn when the room is run up to its distance. Considerable work has been done clearing and securing the back-deep through the old workings. It is contemplated to open up the old water level out to the shore in order to drain off more surface water. A large pump has been placed in the bottom of the slope. This pump is capable of discharging 350 gallons of water per minute, and is sufficient to keep the pit dry without the aid of the pump at the upper landing, which can be used if required.

The quality of the coal is improving as the mine is being opened up. The manager expects that the output will be more than double next year. The fan is giving good satisfaction, the air being much better than at any time since the mine was opened. The shipment of Dolomite has been continued throughout the season and will exceed last year's output by 1,000 tons.

BLOCK HOUSE AND GOWRIE COLLIERIES, PORT MORIEN.

On the 25th day of May last a new shaft was commenced 200 feet north-west from the sea shore at Port Morien, in order to reach the Gowrie seam. This was completed in 190 days and the vein reached at a depth of 205 feet 6 inches. The seam at that point is five and a half feet thick, three inches being roof coal. The roof coal is found to be thinner there than it is further west or inland Two very heavy feeders of water were encountered in sinking, one of them has been cribbed off, the other is reducing in volume. The diameter of the shaft is 12 feet. A double drum, double cylinder engine, 30 horse power, is used for sinking. It is not at all unlikely that Mr. Ochiltree-McDonald will sink to the next seam below the Gowrie.

Please find tables appended showing accidents and air measured on monthly visits. The tables showing the visits do not include all that I made, as I always visit each mine when any accident occurs, and I also visited some of them several times through the month.

In conclusion, I beg leave to say that your suggestion to Mr Donkin, Resident Manager, Dominion Coal Co., is being carried out, regarding keeping the air close to the faces of the rooms, and building brick or stone stoppings in the airways instead of wood, and having wooden doors to a certain extent put in place of canvas doors, and having all shots in pit stemmed with damp clay instead of slack coal stemming, which undoubtedly is an improvement.

MABOU COAL MINES.

During the season developments have been made in the way of opening up some of the coal seams there. A new slope has been sunk at an angle of 40 degrees, well timbered and a track laid up to the surface. From there a trestle work carries the track up to a bank-head 20 feet by 30 feet by 20 feet high, built of heavy timber all planked over. An engine house 20 by 25 feet in which is placed a pair of Link-motion engines 12½ horse power each, a 30 horse power boiler, a forge and store house 10 by 30 feet with requirements for forge work have been built. Two dwelling houses and barn have also been built. A level from the sea shore has been driven in on the 7 foot seam a distance of 250 feet, also a level 300 feet has been driven in on what is called the No. 2 or 8 foot seam and the old level on the 13 foot seam opened at the sea shore and driven in about 250 feet. A temporary wharf was built at this seam from which seven small cargoes of coal were shipped during this season. The coal in those seams looks well especially in the big seam. This seam is found to be eleven feet thick on the inside of a trouble 50 feet from the shore, and continues so during the last 200 feet that it has been driven, with only three small clay partings in it. James W. Wilson has charge of the workings there.

I remain yours obediently,

P. NEVILLE,

Deputy Inspector.

CUBIC FEET OF AIR CIRCULATING IN MINE, MEASURED ON MONTHLY VISITS.

MINE.	Oct.	Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.
Hub	35500	40200	40100	45000	40000	39590	40200	44500	......	......	......	......
Caledonia	63570	86500	82900	76400	76000	78550	60900	78590	78100	80420	78820	75000
International	68910	67200	67200	68600	68600	60700	62500	67210	78000	68600	68965	71000
Bridgeport	50100	48100	39900	......	......	......	......	......	......	......	......	......
Reserve	146200	120200	120000	145000	159900	155500	165200	140000	159500	172000	175000	175100
North Sydney	8600	5000	5600	4000	......	......	......	......	......	4000	4300	5000
Sydney Mines	89660	88265	82230	88855	82355	83665	83280	79355	80400	80420	79660	92455
Dominion No. 1	63750	68525	89400	79000	77700	72350	73600	62060	72190	80000	78820	70900
Broad Cove	8900	......	......	......	......	......	......	9000	......	......	......	......
Cape Breton Coal Co	15000	10500	11600	......	......	......	......	9000	......	11400	20100	21120
Block House and Gowrie	......	......	......	......	......	......	......	......	......	......	2000	800

ACCIDENTS IN CAPE BRETON COLLIERIES, DURING YEAR ENDED SEPTEMBER 30TH, 1899.

Date.		Mine.	Name.	Age.	Occupation.	Remarks.
1898.						
Oct.	1	Reserve	Thomas Boutilier	50	Miner	Slightly burned on face by gas.
"	22	Caledonia	Joseph Hilliar	49	"	Fatally injured by fall of coal from face of room.
"	22	International	Michael J. Gillis	35	"	Slightly injured by shot blowing through pillar from next room.
Dec.	8	Dominion No. 1	Joseph White	20	On-Setter	Leg broken, caught under coal box wheel.
"	20	"	Wilson Boutilier	22	Driver	Seriously injured, caught between coal box and top of trap door.
1899.						
Jan.	13	International	Patrick Walsh	37	Miner	Leg broken, fall of coal from face of room.
"	26	Dominion No. 1	Fred Duffeny	22	Driver	Badly squeezed between full and empty coal box.
Feb.	3	Sydney	Neil Boutilier	20	"	Hurt by run away coal box out of room.
"	18	"	John Morrison	54	Miner	Fatally injured by fall of coal whilst holing in pillar.
March	23	Caledonia	Angus McDonald	27	"	Hurt on head from piece of hung shot.
April	24	International	John Cadegan	41	Overman	Leg broken, caught between run away full waggons on endless rope haulage deep
"		Dominion No. 1	Dan. McCormack	51	Miner	Collar bone and one rib broken, caught between empty coal box and pillar.
May	9	"	John D. Gilliss	22	"	Killed, fell out of cage while descending shaft.
"	9	Sydney	Peter Morrison	20	Stableman	Leg, broken, caught between timber tram and iron trace.
"	18	"	Michel Dunphy	28	Miner	Leg broken by piece of coal from shot whilst loading
June	16	Caledonia	[illegible]	[illegible]	"	Killed by after damp from explosion of gas.

"	16..	"	Thomas Johnstone...		Manager	
"	16..	"	Alexander McDonald.	42	Miner	" " "
"	16..	"	Stephen McCormack.	38	"	" " "
"	16..	"	Roderick McDougall	38	"	" " "
"	16..	"	Albert Grant........	38	"	" " "
"	16..	"	John Doyle, Jr......	29	"	" " "
"	16..	"	Neil McDonald......	29	"	" " "
"	16..	"	Malcolm McAuly....	22	"	" " "
"	16..	"	William Simpson....	18	"	" " "
"	16..	Reserve.......	George Evans.......	25	Loader	Killed at face of room by piece of coal falling on him
July	13..	Dominion No. 1.	Sam Vicars.........	21	On-Setter ...	Hurt by tram of air pipe breaking away from haulage rope going down deep.
"	18..	Sydney	John Morrison	54	Miner	Fatally injured by fall of coal whilst holing in pillar
Aug.	12..	"	Alexander Beaten ...	45	"	Seriously injured by part of hung shot falling on him while breaking off room.
Sept.	2..	Dominion No. 1.	Alexander Campbell .	65	"	Killed by fall of loose coal from hung shot, at face of room.
"	5..	Caledonia	Alexander Ferguson .	38	"	Leg broken, fall of coal from face of room.
"	7..	Dominion No. 1.	Hugh Campbell	30	"	" " "

MONTHLY VISITS, DURING THE YEAR ENDED, SEPTEMBER 30TH, 1899.

Mine.	Oct.	Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.
Hub	5	14	9	9	17	28	19	13				
Caledonia	6	19	10	24	28	22	10	22	8	8	12	16
International	8	5	17	27	15	26	7	31	5	28	26	20
Bridgeport	11	25	16	21	18	11	15	5	3			
Reserve	12	9	15	16	27	14	18	24	9	11	18	18
North Sydney Company	13	26	22	18	23					15	15	27
Sydney Mines	14	22	21	19	23	17	22	16	30	15	16	20
Dominion No. 1	15	24	14	7	4	10	6	3	7	10	14	15
Broad Cove	19							26				9
Cochrane Lake		10										
Cape Breton Coal Co.	26	17	26				30	19		21	28	28
McAdams Lake							28					
Block House and Gowrie									2		29	

MISCELLANEOUS.

In Mr. Neville's report will be found a reference to the colliery of the Messrs. Burchell Bros., at New Campbellton, Victoria County, and to their operations during the past year. At Broad Cove the works of the Broad Cove Coal Company were discontinued during the latter part of the season pending a reorganization. Messrs. McKenzie and Mann have traced the principal seams as a preliminary to opening their submarine extension. So far the explorations would show a large and valuable sea area easily accessible by slopes.

At Mabou Mr. R. P. Fraser and his associates have continued opening the seams, and have considerable amounts available for extraction.

Further notes on the Inverness Coal fields will be found in Mr. Neville's report.

The Canada Coal and Oil Company have commenced the erection of a plant for distilling the oil shales at East Bay. These shales are said to yield a large amount of illuminating and lubricating oils of superior quality. Should these operations prove successful there are many deposits of bituminous shales which will probably receive attention.

GOLD.

The returns for the year ending September 30th, show that 27,772 ounces were produced, as compared with 31,104 ounces 17 dwts. in 1898.

The cause of this decline has been attributed to the number of persons who have bonded properties, and to the fact that many owners of working properties have directed their energies more to affecting a sale than to regular mining operations.

SPRINGHILL, Sept. 30th, 1899.

TO E. GILPIN, ESQ.,
Deputy Commissioner and Inspector of Mines,
Province of Nova Scotia.

DEAR SIR,—I have the honor to submit to you the following report on the Gold Mines of Guysborough and Halifax Counties.

GUYSBOROUGH COUNTY.

Isaacs Harbor. On the 24th July, 1899, I visited the Hurricane Point Mine, W. F. Fancy, Esq., manager. 40 men employed, working night and day. This mine is situated on a narrow point of land, extending some 2,000 feet out at right angles to Isaac's Harbor. The strike of the lead is nearly at right angles to the point of land. So that all the mining carried on must necessarily be under the harbor.

There are two shafts on the property. At a depth of 70 feet in the west shaft, a heavy fold occurs, dipping westerly at an angle of 37°. They are now mining at a depth of 350 feet. For a distance of 100 feet to the rise of the fold the lead show very well and is the principal part now worked. The belt is 4 feet thick, and the lead 8 inches thick. About 12 inches of the belt is milled. The system of mining at this mine is understopeing.

Surveys have been made both in the mine, and across the harbor, and it is proved that there is 120 feet of hard rock between the workings and salt water; and on account of the strike this is increasing as the workings advance.

All mining to the east of the main shaft has been discontinued for some time.

CUBIC FEET OF AIR CIRCULATING IN MINE, MEASURED ON MONTHLY VISITS.

MINE.	Oct.	Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.
Hub	35500	40200	40100	45000	40000	39590	40200	44500				
Caledonia	63570	86500	82900	76400	76000	78550	60900	78590	78100	80420	78820	75000
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Bridgeport	50100	48100	39900									
Reserve	146200	120200	120000	145000	159900	155500	165200	140000	159500	172000	175000	175100
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Broad Cove	8900							9000				
Cape Breton Coal Co	15000	10500	11600					9000		11400	20100	21120
Block House and Gowrie											2000	800

give this part of the mine air and to facilitate the handling of the product.

FOREST HILL.

Modstock Gold Mining Co., G. F. McNaughton, manager. Thirty-five men employed. The main shaft is sunk 180 feet. The belt is about 4 feet, and the lead 4 to 6 inches thick. Over and under stoping is practiced. Timbering and ventilation are good. A Duplex Compressor 10″ × 14″ has been erected at the south property, and the air carried to the main shaft, a distance of 1000 feet. Rand Air Drills have been introduced into the mine, and are proving their superior qualities. A donkey engine was erected at the shaft for hoisting and pumping. An automatic skip will replace the tub system, and the product of the mine will be conveyed to the mill by a tramway some 450 feet long.

The Company are sinking another shaft 500 feet south of the present workings. It is now down 45 feet. All future underground mines here will be carried on by compressed air drills.

SOUTH SHAFT.

G. F. McNaughton, manager. This shaft is sunk 85 feet deep, and employs 16 men and boys. Tunnels have advanced east 125 feet, west 175 feet. Mine works single shift. There is a 5 stamp mill working continuously.

Air drills are used entirely in this mine, and are very successful. The hoisting is done by an engine, and water is now handled by tubs, but a pump is to be placed in the shaft at once.

MCCONNELL MINE.

James McConnell, manager. Thirty men employed working on the same lead as the Modstock Company, but further to the eastward. Tunnels have advanced 90 feet east and west respectively. Engines are used for hoisting, but the mine water is handled by tubs. Timber and ventilation are good. Another shaft, being sunk some 300 feet east of main shaft, but on the same lead. It is now down 45 feet and tunnels have been turned off each side.

MELROSE.

Crow's Nest Mining Co., W. H. Weston, manager. Thirty men and boys employed. This mine is situated on the side of a high mountain, and comprises three levels, and an opencast working No. 3 level is the lowest, No. 2 next, then the 60 feet level and the opencast Those top workings are 200 feet higher than No. 3 level. During the year a raise was driven from No. 2 up to the 60 foot level, thence up to the surface. Considerable ground was stoped, back and overhand near this raise. Tunnelling has been carried on east from the 60 foot level, and raised to the surface. Several crosscuts have also been driven to cut leads to the north. The lower level is to be advanced

350 feet then back stoped to the surface, to connect with the workings there. The ore is got from the surface works by a chute to the lower level, thence to the mill.

A 20 stamp mill is in operation, milling about 50 tons of ore per day. Air drills are used for all mine work, and both the mill and the mine are lighted by electric lights, the latter being used also on the surface and opencast works.

The rock milled contains from 2 to 3% of concentrates, of which considerable has been caught in blankets, and is to be treated with "Cyanide" in a small way, to see if it will pay to work them. If it proves profitable a Wifley table will be added to the plant. The timbering and ventilation are good.

COCHRAN HILL MINE

Mr. Herbert Hopping, manager. This mine is not working at present, owing to a defect in the framing of the new 20 stamp mill, built last year. They are now reframing it so that the stamps and rock breaker will be separate, and they contemplate adding two Wifley tables to handle the concentrates. In addition to these improvements a compound hoisting engine will replace the one now in use; and an air compressor capable of handling three drills in the mine is to be set up at once. Sinking and crosstunnelling is carried on continually. The belt worked is from 4 to 14 feet thick with stringers of quartz running through it. About 75% of the belt is milled. The ventilation, timber, and ladderways are good.

Another shaft is to be sunk 150 feet to the westward for ventilation and increased output. A trestle of 150 feet connects the tramway with the mill.

GOLDENVILLE.

Blue Nose Mine, A. G. McNaughton, manager. About 60 men and boys are employed, working night and day. There are two shafts on the Springfield lead. A new shaft house 40 feet post, 18 feet by 18 feet, has just been erected at the west shaft, and the shaft has been remodelled and retimbered, 13 feet by 5 feet by 300 feet, with two compartments, one for hoisting, the other for ladders and pumps. The belt is principally whin rock with small seams of slate every two feet. There are two leads in the belt running from 5 to 7 inches. Understoping has advanced east 350 feet, and west 450 feet. Timber, ladders, and ventilation are good. A 20 stamp mill, crushing about 50 tons of ore in 24 hours, is running continuously. A rock breaker, 9"x15", "Dodge," has been added this year. A compressor, capable of running six air drills in the mine is ready to work. This is in addition to the compressor now in use. Air drills have been in use at this mine for several years, and have proved by far the most economical.

A tunnel has been driven from the east shaft south, a distance of 50 feet across the metals to the south belt, consisting of three leads, one in the hanging wall, one in the centre, and one in the foot wall, making about 20 feet of crushing material.

Tunnels have advanced on this lead 75 feet. An upraise from the inside of cross cut, on the belt, has been driven 85 feet.

NEW GLASGOW GOLD MINING CO.

G. A. Hirschfield, manager. This mine employes from 40 to 50 men. There are three shafts sunk on three different leads on this property, viz.:—Striker, Canada, and Palmerston.

The main shaft, on the Striker lead, is 165 feet deep. The belt 3 feet 8 inches, and the lead 3 to 14 inches thick About 25% of the belt is milled. The system of mining is understoping, and it has advanced easterly 400 feet. Air drills are used for boring. This mine is well timbered and ventilated, and the ladderways are good.

CANADA.

The shaft is about 200 feet deep, and the belt is 4 feet, lead is 8 inches thick, and probably 35% is crushed. Stoping has advanced in a westerly direction a distance of 100 feet. The system of mining, timbering, ventilation and ladderways are the same as in the Striker shaft.

LITTLE PALMERSTON SHAFT.

This mine has been idle for the past 20 years. Early in the spring they began to pump the water out of the mine, and a test lot of some 30 tons has been mined, running high in gold. A deckhead has been built over the shaft, and a hoisting engine of 16 H. P. has been set up, which also does the pumping. The mine was idle at the time of my visit, on account of the pump having got out of order, but will start again in a few days.

A short distance south of these works, the Company are opening out another mine on the "Meridian" lead. A wym has been erected and several men are at work.

ROYAL OAK MINING CO.

W. J. McIntosh, manager. Though not yet mining the company are making every preparation to do so on quite a large scale. They have erected a new deckhead, boiler and engine house combined. The shaft is on what is known as the Gladstone property, and is about 160 feet deep. The water is being pumped out and the shaft retimbered. A good ladderway extends down for 40 feet vertical, thence at an angle of 43° to the bottom. The boiler is of 35 H. P., the hoisting engine is of 40 H. P., and also does the pumping.

A modern 10 stamp mill is to be built some 600 feet to the westward of the shaft. In fact everthing so far is substantially built, which goes to prove the promoters mean business.

WINE HARBOR.

Plough Lead Gold Mining Co., M. McGrath, manager. Twenty-two men are employed, working on two leads the Plough and the Westcasset. The former belt is 20 feet thick, and was lost on a fault some 24 years ago. The new shaft is down 110 feet and is well timbered and laddered. The system of mining is understoping, and has been extended some 60 and 70 feet east and west respectively. They are opening up on the large belt, when it is expected that 50% of it will be crushed. The shaft house, pumping plant and hoisting engine, etc., have been erected during the past year.

WESTCASSET MINE.

On this lead there is a shaft, sunk some thirty years ago by English capitalists, about 60 feet deep. It has been pumped out and retimbered, also fitted with a new ladderway, and is now in good order. The hoisting is done by wym, and water handled by tubs. The lead is 5 feet thick and yields about 5 dwts. to the ton. The whole belt is to be milled. A tramway 250 feet long has been built to the Plough shaft, and the ore is taken to the mill over the same road from that point.

NAPIER GOLD MINING CO.

David Steele, manager. This mine has been in operation since the latter part of 1898, but in June of this year the property was bonded, and has since been idle. There are three shafts sunk on three different leads, viz.:—the Moore, Piggot, and Hooking Bull. The respective shafts are 180 feet, 70 feet and 65 feet deep. Air drills were used in the mine, and there is a ten stamp mill on the property.

GUYSBOROUGH GOLD MINING CO.

E. A. Mortimer, manager. Forty men are employed working two shafts per day. The mill works by day only. The property has three shafts working. The middle shaft is 155 feet, the eastern shaft 69 feet, the west shaft 90 feet deep, working on a belt 3 feet and lead 2 to 4 inches thick. An air compressor capable of supplying 4 drills in the mine has been set up and is now working. A modern 10 stamp mill has been built and a Wifley concentrator has lately been added. Two new boilers and hoisting engines have also been erected, and the mine water is taken out with a Cornish pump. Two of those shafts were sunk some years ago, and they had to be pumped out, and retimbered and remodelled.

All work at this mine has been done within the past year. The best ore is taken from the west shaft and is seemingly dipping to the west. Understoping will be introduced but overstoping has been the practice in the past. The ventilation, timbering, and ladderways are good.

At Cooper's Brook in this district I visited a " Cyanide Plant," built by the Messrs. Wethersole and Russel, to treat the pulp or tailings that may be in any of the districts. The plant is capable of handling 200 tons of sand per week, and from tests made at Cooper's Brook, and several other places in Nova Scotia, a good per centage of gold per ton can be extracted. The power, water, is carried by a flume to the plant, a distance of 1,700 feet, and is capable of providing all power for the plant, in which is included a "Sand Pump," through which all material for the plant is raised.

HALIFAX COUNTY.

ECUM SECUM MINE.

Westminster Gold Mining Co., C. H. Drillio, manager. Fourteen men are employed, working night and day, on what is known as the little Flat South Lead. The shaft is 125 feet deep. This lead was worked for 700 feet along the surface from 30 to 40 feet deep, about 12 years ago. The new shaft is 15 feet by 4 feet 8 inches, two compartments. It is about the centre of the old workings, and is to be sunk 200 feet deeper before any cross tunnelling will be done. The angle is 65°, but gets easier as the shaft deepens. The belt is 6 feet thick, and there is one lead on the hanging, and another on the footwall, making in all about 20 inches of crushing material. There is an old mill near the works, but it has been condemned. If all goes well a new mill, of thirty stamps, will be erected at once. A commodious boarding house has been built by the company near the mine. Hoisting engines are used, but the water is carried through the old workings to the lowest point and pumped out there.

MOOSE HEAD MINE.

Edward Brownell, manager. This company began, early in April of this year, to build a modern mill and deckhead at this mine. In June just as the buildings were near completion the whole structure, including the boarding house and barn, was destroyed by a forest fire. The company immediately began to rebuild, and at this date, the latter part of July, are well ahead with another plant. The mine is 150 feet deep, and lies at an angle of 45°. It is well timbered and laddered. The shaft was sunk 50 feet during last winter, and was ready to begin stoping, when the fire took place. The belt is 4 feet and the lead 20 inches thick, and has been worked by tributors heretofore on the lead only. Timber, ventilation and ladders are good.

HARRIGAN COVE MINE.

J. G. Bishop, manager. Twenty-two men are employed working night and day. There are two shafts on the property. The east shaft is 70 feet deep, and stoping extends west 70 feet, and east 50 feet.

The belt is 4 feet thick, and about 14 inches of this is milled. The angle of dip is 45°.

The west shaft is 50 feet deep and still sinking. The timber, ventilation, and ladders are fairly good. Wyms are employed for hoisting and freeing the shafts of water.

Adjoining the Harrigan property, Mr. Thos. Cooper, representing the Archibald Company, has 15 men at work prospecting. They have cut a trench 164 feet long, and exposed some 20 leads, from 4 to 20 inches thick. South of the Harrigan mine he is now sinking two shafts.

SALMON RIVER.

Dufferin Mine, E. A. Daly, manager; Wm. Thompson, assistant manager. About 175 men are employed on two shifts. The history of the Dufferin mine dates back to 1880, the year of its discovery. Between that year and the year 1891, nearly 40,000 oz. of gold were won from some 96,000 tons of rock. No great depth was attained in any of these workings, owing to the difficulty of handling the water. Operations were discontinued for the same reason in 1894. The property, comprising 356 gold areas, was acquired by its present owners, the Montreal and London G. and S. Dev. Co., Ltd., in the early part of last year.

After securing title to this ground, and a number of smaller holdings in the vicinity, new pumping machinery was introduced and development began again in the bottom of the old workings, to prove whether or not the leads previously worked continued to carry the same values in depth. This work showed that not only did the leads continue to carry values, but also proved the existence of two other leads, heretofore unknown. On the facts being proven development was undertaken on a large scale. A new hoisting and pumping plant was introduced, and a vertical shaft was sunk a total depth of 300 feet. While sinking, crosscuts were run at intervals both north and south, not only to prove the existence and values of the leads, already discovered, but also to explore for others. Discoveries were made in this way. At the present depth, 300 feet, there are four parallel leads of good size, which can be worked from the present shaft. On some of these considerable drifting has been done, viz.: No. 2 lead west 200 feet level, the drift has been extended a total distance of 500 feet. The extension of this drift has opened up a large block of ore. On the No. 1 lead west a drift has been extended several hundred feet, and some stoping done. This is known as the slate lead. On the 3rd lead, at this level, a tunnel has been run for several hundred feet.

At the 300 feet level, the tunnels, both east and west, have been extended on Nos. 1 and 2 leads, the principal work being done on No. 2. The east tunnel on the lead has been advanced a total distance 145 feet. The west drift on the same lead 110 feet.

Large bodies of quartz have been opened up by those tunnels. The

ELK MINE.

Mr. Otto Collins, manager. He employs 5 men. The tunnel at the bottom of the shaft advanced 75 feet during the year. Considerable stoping has been carried on at the 300 feet level. The shaft is very irregular. For 75 feet it is perpendicular, and for 225 feet it lies at an angle of 50°. The timbering and ventilation are fair.

MOOSE RIVER.

Colonial Gold Mining Co., Mr. J. K. Pearson, manager. He employs 7 men. This company's mill was burned to the ground in the month of May last, and since that date they have continued trench cutting on the property, and a number of valuable seams have been discovered.

TOUQUOY GOLD MINING CO.

Mr. David Patriquin, manager. Eleven men are employed during the summer season, but the number will be increased later. The system of work here at present is the same as all the other places in this district, viz., open cast, or quarry work. About 18 inches of the surface is carted away as waste, and then excavation continues some 30 or 40 feet into the slate beds. They are fairly bristling with quartz, and yield from 50 cents to $1.25 per ton. This company are also sinking a shaft, east of their mill, to cut a lead on the fold of an anticlinal. They are now down 30 feet. During the past season the greater part of the work done was on what is known as the Chapel lead.

On the Brittania lead a shaft was sunk 90 feet, and considerable stoping done east and west and, some 600 tons of ore were taken out.

REYNOLDS BROS., GOLD MINING CO.

An 8 stamp mill, 40 H. P. boiler, and engine, together with the necessary buildings, have been erected during the last year. The system of mining is opencast. Four men work the quarry and the mill. About 14 tons of material can be milled each day, yielding 1 dwt. per ton. In the quarry the fold of an anticlinal has been exposed showing the north and south dip. The belt in the north arm is 4 feet thick and is nearly all milling material.

MOOSE RIVER GOLD MINING CO.

Mr. A. McGregor, has charge of this property, and is working a large quarry employing eight men, and milling about 14 tons per day.

There are also a number of tributors at work on this property, sinking a shaft on the Moleskin lead. They are down about 50 feet. The belt is 4 feet, with 1 foot of milling ore. It looks promising.

EAST CHEZZETCOOK.

Lake Catcha Mine, Henry Taylor manager. This mine employes 15 men. The shaft is 60 feet deep, and still sinking; but stoping has began east and west. The belt is 7 feet thick, and nearly all of it is crushed.

The plant comprises a 15 stamp mill, patent feed, and rock breaker. The hoisting and power engines are fed by a Matheson boiler of 60 H. P.

At the time of my visit the mine was undergoing repairs; engines, boiler, shafts and the ladderways are to be made up to date. After which the manager intends to increase the number of men and operate on a larger scale.

ANDERSON MINE.

Mr. J. H. Anderson, manager. There are 12 men employed. The shaft is on the Sheba lead. He is now working near the surface, on an angular, and is doing considerable work developing to the north of the shaft.

This mine was 100 feet deep, but the lead was lost on a slide, and though a large amount of work was done searching for it, they were unable to locate it again. Engines are used for hoisting and a pump handles the water.

The mill has 10 stamps. The engine is 25 H. P. and is fed by a boiler of 30 H. P. I found the timber, ventilation, and ladders good.

Mr. F. W. Hanright is opening a mine a short distance west of the Anderson property. The shaft has just been started, and a little ore taken out. A small hoisting and pumping engine is now being set up; when sinking will begin. This is probably the Sheba lead.

There is considerable prospecting now going on in this district, and the indications are that there will be an increased amount of mining here at no distant date.

LAWRENCETOWN DISTRICT.

Shanghai Mine. Mr. J. H. Townsend, owner and manager. Five men are employed. The northern belt on the Shanghai property is known as the Wadlow lead, and consists of, first, the 6 inch north lead, twenty-seven feet south is the middle, and 12 inch lead, further is the Wadlow. The works in the north and middle leads have fallen in, having been worked years ago. In the present workings the shafts on the Wadlow have been cleaned out and retimbered. The deepest one is about 50 feet.

In addition to the cleaning up of those shafts, the eastern shaft on the middle lead has been refitted and sunk to its present depth of 75 feet. Another shaft is being sunk further to the eastward down 40 feet. The belt is 3 feet, and lead 14 inches thick. Hoisting is done by wyms. A system of cross tunnels has drained these shafts to the present depth. There is a 3 stamp mill, water power, on the property. Timber, ventilation, and ladders are very good.

WAVERLEY.

Tunnel Mine, J. G. McNulty, manager, and Joseph Hoskins, foreman. Sixty men are employed. A cross tunnel was started about 5 feet above the level of the Waverley lake, at the bottom of a hill some 200 feet high, and was driven in an easterly direction 640 feet, when the lead was tapped, and work on it began. Levels have been continued in it, in a northeasterly direction 560 feet, and southeastwardly for 150 feet. An upraise has been driven from the cross tunnel, a distance of 150 feet to a shaft on the hill top, which was sunk some years ago. This shaft is 60 feet deep, and is used for ventilation. A winze has been sunk 125 feet on the northeast side of the tunnel to prove the ore to the dip, but it is not now working. An upraise is to be driven directly above the winze to the surface. The belt is from 4 feet to 8 feet thick, and the lead is known as a Barrel vein, and is very deceptive, as an 8 or 10 inch lead of this kind will yield much more quartz than an ordinary vein, on account of the rolls that occur in forming the barrels.

All mining is now done on the north arm of the anticlinal, but on the upraise to the shaft the south dip is clearly defined.

I found the timber, ventilation, and ladderways of this mine in good condition. There is no mill on the property. All ore is hauled a mile to a mill of 20 stamps, which has two Wifley tables to save the concentrates.

The Company intend erecting a mill of their own, the power to be taken from a head of water some two miles away. Air drills are to be used in the mine.

MONTAGU.

The Golden Group Mining Company has tributors at work in several places on the Skerry lead. Some 4 or 5 shafts have been sunk from 50 to 125 feet, and a little stoping done east and west. Mr. D. McAskill, the Company's manager, is on the ground to see that the work is correctly performed.

Gordon Cameron, and others, are tributing on the iron lead, Lawson block. They have sunk a shaft 100 feet, and have stoped 50 feet west, and 100 feet east.

E. Boland & Co., are tributing on the Montreal block. They have sunk a shaft 100 feet, and stoped east 30 feet, and west 50 feet.

There are several parties of prospectors at work trenching to the rth of the Montreal block.

OLDHAM.

Bonanza Mine, Mr. H. F. Donaldson, manager. He employs 15 men. There are two shafts on the lead he is working. They have been pumped out, retimbered, and laddered within the past year. Stoping was continued east 100 feet. The belt is 3 feet and the lead 4 inches thick, and about 6 inches of the belt is crushed. Hoisting engine, and a 65 H. P. boiler has been erected at the works. Two Northey steam pumps handle the water of the mine.

It was at the bottom of this shaft, that John Allan, laborer, 35 years of age, had a leg broken while at work. The accident was as follows: While hoisting, the tub got off the slides and caught a stull, some distance up the shaft, carrying it out. The stull went down the shaft, struck the bottom, and bounced, hitting Allan in the leg with above results. Considerable prospecting is being done by this Company on the Ohio and Ritchie leads further to the north.

BLACKIE LEAD COMPANY.

Mr. M. R O'Shaughnessy, manager. Eleven men are employed. This shaft has been cleaned out, and refitted. It was formerly 30 feet deep, but has been extended 65 feet. Hoisting engine, boiler, and an air compressor capable of handling 2 drills underground, have been erected during the year. Understoping has advanced east and west 52 and 38 feet respectively. The working belt is 3 feet 4 inches, and about 16 inches is put through the mill. Timbering, and ventilation are good.

There are a number of men now tributing and prospecting around this district.

During my visit to the gold mines of the eastern district, my attention was frequently called to numbers of old mining shafts, and holes in the ground, from 20 to 300 feet deep, that have been left, (or abandoned) without any protection. This complaint is not from any one district, but in every mining camp from Isaac's Harbor to Oldham.

I remain your obedient servant,

M. BLUE,
Deputy Inspector of Mines.

Report on a visit to the following mines:

LEIPSIGATE.

Cashon-Hines Mine, Capt. Hines, manager, John Thornham, underground foreman. The company is still working on the fissure lead, so successfully operated by them for the past several years.

It is heavily mineralized and shows gold freely in the face.

The shaft is down about 25 feet, and the lead, having been left standing on the foot wall, presents a promising appearance.

The operators intend sinking and drifting on the belt at once.

NORTH BROOKFIELD.

R. L Sherman is managing the old Philadelphia's Co's. property for J. B. Neily, and has 27 men employed.

Work is being prosecuted on the fissure lead by a shaft 300 feet deep.

At a depth of 235 feet they have been driven in west 180 feet, and at the bottom level a tunnel is driven east 340 feet.

On the Nelson lead sinking has been done to a depth of 150 feet from where levels have been driven in east 40 feet and west 30 feet.

The mill contains 20 stamps, only 15 of which were running at the time of my visit.

The concentrates are handled by one Wifley concentrator.

THE BROOKFIELD MINING CO.

W. L. Libbey, general manager; N. Crowe, underground foreman. About 70 men employed.

The same fissure lead is being worked on this property, and provides about 2 feet 6 inches of crushing material.

It intersects the strata at an angle of 16°, and has a dip to the south of 63°.

Entrance to the mine is gained by an incline on the dip of the vein at an angle to the west of 35°, also by a shaft on the dip, and at right angles to the strike, which meets the incline at a vertical depth of about 330 feet.

There is also a shaft, used as a discharge from pump, and as a ventilator, which meets the incline at a vertical depth of 225 feet.

The bottom of the incline is at a vertical distance from the surface of 590 feet.

Levels have been driven in westerly from the incline at the following vertical depths from surface and to the following distances:—

No.	(1).	Level at a depth of	225	feet is in	440	feet.
"	(2)	" "	275			
"	(3)	" "	310	"	570	"
"	(4)	" "	403	"	460	"
"	(5)	" "	470	"	425	"
"	(6)	" "	525	"	155	"
"	(7)	" "	582	"	15	"

No. (3) level has also been driven easterly for about 165 feet.

Practically all the ground down to No. (5) level has been worked out. The system employed is back-stoping, and underground the mine presents a typical example of systematic working.

The incline and shaft are both used for hoisting, in which operation a patent automatic skip is employed.

A new Northey pump of 50 gallons capacity had been installed on the day of my arrival.

A 5 drill air compressor is employed to run the drills in the mines.

The mill contains 20 stamps with 14 foot plates.

The concentrates are collected by 8 " Triumph " concentrators, and treated by the "Thies" process of barrel chlorination. The plant contains 3, single hearth, reverberatory furnaces, only one of which, however, is used; and 4 one ton barrels, and is capable of treating 16 tons in 24 hours.

GOLD RIVER.

T. N. Baker's Mine, John Wheeler, manager. 3 men employed. Work is being carried on in a lead dipping about 45° to the north. The strike of this lead is about 1,500 feet north of the anticlinal.

The main shaft is down 100 feet on the dip of the lead, and at 65 feet a tunnel has been driven in east following the pay streak for 165 feet, where it meets the bottom of a shaft 45 feet from surface. From here the ground has been partly worked out by overhand stoping for 112 feet, where another shaft is met at a depth of 72 feet.

To the west of the main shaft at the 65 foot level, the above mentioned pay streak which takes the form of a " roll " or corrugation is followed for 160 feet where a " break " was encountered.

Between this and the bottom level where another rich roll has been struck, and which is driven in about the same distance to the west, the ore has been removed by the underhand method.

A 2 stamp test mill is employed to crush the ore which is hoisted by a small engine and drum.

BLOCKHOUSE.

Charles McClair is managing this property for Miner T. Foster, who has about 20 men employed.

A fissure vein with an average thickness of about 9 inches is being operated.

Two shafts are sunk on the dip of the lead (about 70°.)

No. (1), under the mill, is 60 feet deep and No. (2) connected with No. (1) 65 feet to the southward is 97 feet deep.

The ground between the shafts and for some distance southerly is worked out by the underhand system though I was informed that as soon as a small remaining block of ore is extracted backstoping will be the method of working employed in the mine.

The shaft-house situated over No. (2) shaft is connected with the mill by a trolley-way over which the ore is carried to the crusher.

It seems apparent that with a few exceptions throughout the Province, more particularly in the eastern portion, the more conservative and old-fashioned ideas are giving way to the introduction of modern methods and machinery.

Machine drills are now probably the rule where comparatively a few years ago they were the exception.

I have the honor to be, Sir,

Your obedient servant,

D'ARCY WEATHERBE, *C. E.*,
Mines Department.

MISCELLANEOUS.

Lead Ore.—During the present summer the Cheticamp Gold Mining Company has continued work at their lead mine, and are arranging for a smelter.

Copper Ore. — During the summer the Coxheath mines were unwatered, the machinery put in good order, and the more important levels extended. The western extension of the ore deposits was tested on the Argyle lease with very satisfactory results. Explorations were also carried on by this company at Eagle Head, Gabarus Bay, and the results are stated to be encouraging. Mr. W. N. Young continued prospecting on lease No. 103, South Coxheath, and at French Road, Mira, and in the Grand River district, Richmond County. At all these points the work performed has shown encouraging results.

At Cape Rouge, Inverness County, the Messrs. Harrison did some work on a vein carrying workable percentages of copper, but operations were suspended pending a dispute as to boundaries

In Antigonish County many licenses to search were taken out for copper. At Polson's Lake, a good deal of work was done on the Ross vein, which showed large percentages of copper and of gold and silver. In the Ohio district numerous discoveries of ore are reported, but as yet the work performed is of a preliminary character. In Pictou County, William Creelman and others secured a copper lease on Dalhousie mountain, and proved a deposit of considerable extent holding workable amounts of copper ore. Licenses have been taken at a number of points in the vicinity of Pictou, and of the West and Middle Rivers, but as yet little active exploration has been carried on.

In Cumberland and Colchester Counties work has in some cases passed from the exploratory stage to that of active working. The state of affairs at the more advanced properties may be gathered from the following report of Mr. Blue:—

SPRINGHILL, 21st Nov., 1899.

E. GILPIN, ESQ.,
Inspector of Mines,
Halifax, N. S.

DEAR SIR,—I beg to submit to you a short memorandum on the copper mines of Cumberland and Colchester Counties.

The principal mines in these counties are owned and worked by the Copper Crown Mining Company, Americans, who are also erecting a smelter at Pictou. Mr. Frank Barndollar, general manager, offices at Central Wentworth, Cumberland Co.

PALMER MINE.

On the 14th of October I visited this mine. There are 10 men employed. The location is about 5 miles east of Westchester Station, I. C. R., and on the West Branch of Wallace River. The slope extends in the side of river bank, northerly, a distance of 100 feet, at an angle of 10°. A level has been driven west about 175 feet; and a crosscut, 50 feet in length, connects the two places.

The copper is of the Peacock variety, and is got in a seam of blue clay, from 2 to 7 feet thick, fairly hard, so that dynamite is used in blasting.

A boiler and small engine combined, of about 25 H. P. has been erected on the opposite side of the river, over which a bridge has been built. The mine is kept free of water by a small steam pump, placed in the slope. A new road, over one mile long, has been opened up from the mine to the old Hunter Road, and the ore is to be hauled with teams to Westchester Station, for shipment to the company's furnaces at Pictou, which I am informed are nearly ready for work.

The Company has built a commodious boarding house near the mine, and a number of the workmen are building houses of their own near the works.

Two miles from this mine in a westerly direction, and nearer the I. C. R., the Company are doing some prospecting for copper. A borehole, some 200 feet deep, has been put down passing through three seams of clay, one of them 15 feet thick.

The Chisholm mine has not been worked during the present season.

The Copper Crown Mining Company's King mine is about one mile east of Oxford Town, on the road leading to Pugwash. Mr. Alex. McPherson is manager. There are 19 men employed. The shaft is 4 feet by 8 feet, and 40 feet deep, sunk on the axis of an anticlinal with dips, south west and north east, in sandstone which seems to be well mineralized. A 15 H. P. boiler and engine attached, supplies the power to friction gear which does the hoisting at the shaft.

The water is hoisted by tubs, but a Cornish pump is shortly to be placed in the shaft.

Riverside mine is situated on the north bank of River Philip, about three miles east of Oxford, and is the property of the Copper Crown Mining Co. Alex. McPherson is manager, and has ten men employed. The shaft is 8 feet by 4 feet, and 40 feet deep. It is well timbered and laddered. The metals dip to the southwest, and are somewhat lar to those in the King mine, being more of a slatey nature.

At a depth of 24 feet, a place 7 feet by 5 feet, was driven in a northerly direction some 30 feet.

A 10 H. P. boiler and engine, has been set up at the mine. A Cornish pump handles the mine water, which is heavy, owing to the shaft having been sunk so near the river.

The whole plant is covered by a substantial building. They are now continuing the sinking of the shaft.

COLCHESTER COUNTY.

The Copper Crown Mining Company's New Annan mine. George L. Heustis, manager. There are 13 men employed on double shift. This mine is on the east Branch of French River, and comprises two tunnels, one on each side of the river. The west side tunnel is advanced 150 feet, and is a water level. The one on the east side is advanced 126 feet. These tunnels are driven in sandstone, that carries grey copper. The formation of this district is well mineralized. The product of the mine is to be hauled to Tatamagouche, a distance of 5 miles, thence by rail to Pictou. There is now stored at this mine about 600 tons of ore ready for shipment.

I have the honor to be,

Your obedient servant,

M. BLUE.

Deputy Inspector of Mines.

The following statement for the year 1899 shows the work performed at the Coxheath Mines, C. B. County.

Active work at the Coxheath Copper mine was resumed on March 1st, the main shaft being unwatered and retimbered from the deckhead down to the 120 feet level; 200 feet of drifting was done on the 136 and 200 feet levels. The machinery and surface buildings were all thoroughly repaired.

In July prospecting work on a portion of the Argyle mine, never before explored, was commenced under the supervision of Colonel Granger, and resulted in locating the extension of the Coxheath veins to a point 3,500 feet west of the Coxheath area.

A new mineral lode was located about 1,000 feet north of the Coxheath vein and some 5,000 feet west of the Coxheath area, and traced eastward 2,100 feet by numerous pits and trenches. This vein apparently differs in its composition from the older veins, containing more quartz, and assays of the ore showed from $3.00 to $5.00 in gold in addition to the copper.

A good road was built from No. 2 shaft nearly to the western boundary of the Argyle, a distance of over a mile and a half, preparatory to enlarged mining operations also opening up a splendid lot of heavy timber land owned by the Company.

The amount of labor performed during the year was as follows:—

Skilled labor above ground	938	days.
" below "	1622	"
Unskilled labor above "	770	"
" below "	1423	"
Teaming labor	496	"
Total day's work	5249	"

Three (3) horses employed.

Oil.—Mr. Neville's report on the coal mines of Cape Breton refers to the work done in search of oil. Attention has also been paid to the signs of oil at Cheverie, Hants County, and attempts made to interest capital.

Plaster.—There is nothing new to note about the plaster quarries, except the shortening of shipments due to higher freights. Work was continued as usual.

Tripoli.—The Bass River Silica Company continued shipping through the year. The Premier Tripoli Company of St. Anns, C. B., spent the summer in preparatory work. The machinery is on the ground, and there is being built an iron factory 75 by 30 feet, barn, boarding house, kilns, etc. About 600 tons of tripoli have been taken out.

Barytes.—During the past year the Middle Stewiacke mine yielded about 275 tons, and about 160 tons were mined at Cape Rouge. In the fall arrangements were being made to ship from Lake Anslie, Cape Breton, about 200 tons mined in 1898.

Manganese.—During the past season Mr. Miner T. Foster mined about 75 tons from his property at New Ross. Parties prospecting in this vicinity report a number of veins up to two feet in thickness of 50 per cent. ore. It is understood that ore of the quality of that found in New Ross commands a ready sale. The building of the Hervey Railway will afford an outlet to any mineral production of this district. At Teny Cape little work was done, only about five tons being extracted.

Antimony Ore.—The deposits at Rawdon received a good deal of attention last year. The following extract from a memo. by Mr. Weatherbe will show the work done:

ANTIMONY MINES AT WEST GORE.

The old "Northup" workings in this district have been re-opened by the Messrs. McNeil, who now have possession of them.

Mr. M. McNeil, as manager, and six or seven men, have been working here since October, and have deepened the shaft from about 200 feet to 240 feet.

Their labors have so far been confined to "sinking," as little is known of the old workings and until they are pumped out danger would be run from water breaking in.

The vein which takes the formation of chutes or chimneys, varies greatly in thickness; but probably has an average width of 8 inches.

These pay-streaks, I believe, are up to 50 feet in depth, and dip at an angle of about 20° or 25° easterly to the horizontal.

The strike of the lead, according to a rough prismatic bearing was N. 46 W. and the dip 73° to the south west.

At present work is being prosecuted below one of these chutes and though the vein has pinched out, the operators expect to strike it again shortly.

A 16 H. P. engine supplied by an upright boiler is employed for hoisting and pumping, though this latter operation is to be facilitated by a larger boiler, the present steam supply being too small.

The pump has a capacity of 94 gallons per minute.

This property includes the "Northup" lead about 4 inches in width, situated about 1,200 feet to the south-west.

This vein is not being worked at present, but shows some first-class ore, taken out during the past season.

MESSERVEY AND MCDOUGALL.

This is a new property about 800 feet or 900 feet to the northward.

The vein shows considerable antimony with limey quartz and probably averages about 5 inches in width.

A shaft has been sunk 55 feet on the lead which dips at an angle of about 72°.

A "whim" is used for hoisting.

Two samples of the ore of the district have been analysed for the department with the following results:—

No. 1.—Antimony, 45.75 per cent.
Gold, 2.48 oz. per ton of 2,000 lbs.
Silver, .10 " " "

No. 2.—Antimony, 18.21 per cent.
Gold, .23 oz. per ton of 2,000.
Silver, .13 " " "

IRON ORE.

As regards the extraction and smelting of iron ore, the progress made last year has not been specially notable. The preliminary operations for a very extensive development of iron and steel making are being vigorously pushed by the Dominion Iron and Steel Company, Ltd., at Sydney. It is true that these operations do not at present contemplate the utilisation of Nova Scotia ores, but are based upon deposits owned by the company in Newfoundland. However, the presence of this plant, will stimulate a search for deposits of iron ore, and no doubt some will be found capable in quantity and quality of competing with the cheap Newfoundland ore.

The Nova Scotia Steel Company continues to operate their mines on the East River to about the same extent as the year before. The Mineral Products Co. worked for some time with the Bridgeville Charcoal Furnace, making ferro-manganese. It was, however, stated that the operations would not be continued next year. At Londonderry a sale was made of the furnaces and property to Montreal parties. It is expected that this establishment will be revived and again become a producer.

I remain, Sir,

Your obedient servant,

E. GILPIN, Jr.

TABLES.

LIST OF MINERAL LEASES (OTHER THAN GOLD.)

IRON.

No of Lease.	Name of Owner.	County.	Agent or Manager.	Address.	No. of Sq. Miles.
93	Moseley, E. T	Cape Breton			1
145	McLean, Jno	"			1
232	Brookman, P	"			1
92	Matheson, D	"			1
102	Smith, W	"			1
103	McKenzie; ~~H. R.~~ D E Cameron	"			1
104	McKenzie, ~~J. W.~~ H.R.	"			1
43, 44, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59	Bartlett, J. H	Pictou			15
68, 71, 83	Nova Scotia Steel Co	"			3
67	Cameron, J. A	"			1
1	McIntosh, J C	Hants			1
5	McDougald, J	Antigonish			1
10	Fraser, W. J	Inverness			1
1, 2	Nova Scotia Steel Co	Guysboro			2
82	McMillan, J. R	Pictou			1
2	Miller, J. C	Halifax			1
22	McMillan, J. R	Inverness			1
					34

	COPPER.				
92	Matheson, D	Cape Breton			1
145	McLean, J	"			1
126	Matheson, A	"			1
95, 106 J E Burchell	Cape Breton Copper Co	"			2
105, 181	Burchell, J. E	"			2
94	McKenzie, D	"			1
4	McInnis, Hugh	Antigonish			1
7	Nichols, T	Victoria			1
6	Hardman, J. E	"			1
5	Cove, J. W	Colchester			1
135 A	McKenzie, R	Cape Breton			½
238	McKenzie, J. A	"			½
132, 133	Paige, S. K	Cumberland			2
					15
	LEAD.				
143	Cape Breton Silver Mining Co	Cape Breton			1
2, 3	Fraser, C. F	Colchester			2
					3
	COAL.				
83, 84, 85	Barton, A. McG	Pictou			3
3/1, 1/3, 2/2, 3, 4, 69	Acadia Coal Co	"	H. S. Poole	Stellarton	18
5/12, 6/13, 7/14	Intercolonial Coal Co	"	C. Fergie	Westville	3
66	Ramsey, Wm	"			1
			Carried	*forward*	25

LIST OF MINERAL LEASES (OTHER THAN GOLD.)—*Continued.*

COAL.

No. of Lease.	Name of Owner.	County.	Agent or Manager.	Address.	No of Sq. Miles.
				Br't. forward.	25
8/6	Nova Scotia Steel Co	Pictou			1
10/24	Richey, M. H	"			1
11/11, 45, 9/10	Gray, B. G	"			4
8/6, 70, 68. 116	Nova Scotia Steel Co	"			4
86	Murray, S	"			1
					36
5/6, 22/51, 74, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 14	Canada Coals & R'y. Co	Cumberland			15
19/44, 55, 16/8, 17/7, 18/18, 20/2, 21/5, 61, 62, 70, 71, 72, 73, 75, 76, 77, 78, 79, 81, 82, 83, 84, 85, 87, 88, 90, 177, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 141, 118, 119, 120, 121, 122, 123, 124, 213.	Cumberland Rail'y. Coal Co	"	J. R. Cowans	Springhill	49
8/5	Lawson Coal Mining Co	"			1
6/12	Londonderry Iron Co	"			1
1/5	Prospect Mining Co	"			
9/22, 15/35, 14/34, 18/38, 18/6	Styles Mining Co	"			5
23/63	Binney, J. W	"			1

TABLES.

LIST OF MINERAL LEASES (OTHER THAN GOLD.)—*(Continued.)*

COAL.—*(Continued.)*

No. of Lease.	Name of Owner.	County.	Agent or Manager.	Address.	No of Sq. Miles.
				Br't forward.	27
111, 164	Sydney Coal Co				2
45/5, 46/28, 47/29, 50/40, 51/41, 52/42, 60/54, 61/55, 62/56, 63/57, 64/58, 65/59, 66/60, 67/61, 68/62, 69/63, 108, 109, 110, 125, 137, 162, 188, 207, 140, etc	Dominion Coal Co	Cape Breton	H. Donkin	Glace Bay	94
117, 246	Hamilton, A. G	"			2
142	LeCras, Henry	"			1
220, 214	Cayley, H. St Q	"			2
116, 164	N. S. M. & T. Co	"			2
179, 180, 168, 190, 208, 223, 241	Roberts, F	"			7
112, 113, 114, 115, 118, 42	Cowans, R	"			6
130	Fairbanks, E. C	"			1
212, 131, 128, 129, 134, 135, 136, 139, 144	Moseley, E. T	"			9
138, 149, 184, 203, 224, 235	White, A. J	"			6
61, 62, 141, 177	Cumberland Ry. & Coal Co	"			4
235, 146, 193, 194, 216	Gowrie & Block House Collieries	"			5
166	Dunn, J	"			1
242	Can. Oil & Coal Co	"			1

244	McInnes, H	"			1
247	McNeil, H. F	"			1
196, 161, 222, 237	Routledge, T	"			4
169, 170, 183	McVey, Jas	"			3
178	Routledge, E	"			1
165	Stephens, L. H	"			1
163, 185	Hamilton, C. F	"			2
199	Copeland, J. D	"			1
243, 171, 174	Gorham, J. W	"			3
½, 181, 211, 233, 236	Burchell, J. E	"			5
215	McKinnon, D. L	"			1
234	Ross, H	"			1
186, 187, 202, 205, 206, 209	Kennelly, D. J	"			6
210	Harold, T. C	"			1
196	Routledge, T	"			1
201, 221	Hickey, C	"			2
204	Morrison, M	"			1
192, 228, 198	McKenzie, J. A	"			3
198	McKenzie, Jas. A	"			1
175	McDonald, J. W	"			1
182, 200, 225, 230	Cossitt, G. G	"			4
167	Murray, J	"			1
191	Tremaine, L. E	"			1
197	McVicar, J	"			1
229	Matheson, D	"			1
218	Morrison, D	"			1
217	Townshend, James	"			1
248	McMillan, J	"			1
			Carried	*forward*	221

LIST OF MINING LEASES (OTHER THAN GOLD.)—*Continued.*

COAL.—(*Continued.*)

No. of Lease.	Name of Owner.	County.	Agent or Manager.	Address.	No of Sq. Miles.
				Br't. forward.	221
219	Way, H	Cape Breton			1
226	Stephen, A	"			1
227	Johnson, J. A	"			1
228	McKenzie, J. A				1
231	Owen, J. M				1
1/2	Burchell Bros	Victoria	J. T. Burchell.	N. Cambl't'n.	3
1/13	McGregor, J. D	Inverness			3
2/6	Ross, H. E	"			1
7/10, 6/4	Shannon, S. L	"			2
8, 9	Fraser, J. W	"			2
11	Dawson, G	"			1
19, 20	Smythe, J. J	"			2
13, 14, 15	Broad Cove Coal Co	"	W. P. Hussey.	Broad Cove	3
26	McKenzie, J. W	"			1
16, 18	Drummond, R	"			2
40, 41	Cowie, A. J	"			2
24	Hussey, W. P	"			1
23, 25, 28	McColl, J	"			3

21	Tupper, M	"			1
39, 30	Tremaine, E. D	"			2
35, 38, 39	Ross, W	"			3
42, 33, 34, 42	Wallace, W. V	"			4
33, 44	Farquhar, J. A	"			2
17	McDonald, H	"			1
					44
1, 7, 8	Terminal, City Co	Richmond			3
2	Columbia Coal Co	"			1
3	Reynolds, W. K	"			1
5	Chisholm, W	"			1
4, 6, 9	Lennoxville T. & C. Co	"			3
27, 31,	McKenzie, Mann & Co	Inverness			3
					277

COAL—SALES.

NAMES.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	Year 1899.	Year 1898.
NOVA SCOTIA:						
Land Sales.	101,484	79,820	75,779	79,724	336,807	330,221
Sea Borne..	117,177	63,795	88,478	123,220	392,670	337,031
Total N. S.	218,661	143,615	164,257	202,944	729,477	667,252
New Brunswick..	88,856	84,077	82,910	71,661	327,504	266,789
Newfoundland..	34,813	9,610	29,312	33,020	106,755	93,241
P. E. Island....	23,780	....	14,867	28,234	66,881	62,051
Quebec.........	140,426	30,881	362,658	495,323	1,029,288	944,160
West Indies....	....	....	....	6,044	6,044	....
United States...	18,363	28,235	36,854	69,736	153,188	98,027
Other Countries.	....	....	....	....	....	3,877
Total......	524,899	296,418	690,858	906,962	2,419,137	2,135,397

COAL—GENERAL STATEMENT.

1899.	Production.	Colliery Consumption.	Sales.
1st Quarter.........................	558,885	46,380	524,899
2nd "	578,323	49,595	296,418
3rd "	748,739	41,558	690,858
4th "	756,386	38,532	906,962
Total..............	2,642,333	176,065	2,419,137

COAL PRODUCE OF NOVA SCOTIA FOR YEAR ENDED SEPTEMBER 30, 1899.

COLLIERY.	Produce.	Sales.	Colliery Consumption.	
			Engines.	Workmen.
Joggins	66,671	58,726	4,691	1,520
Springhill	369,533	346,795	14,422	6,915
Scotia	917	757	....	118
Acadia	258,680	224,655	30,748	5,200
Intercolonial	201,556	185,193	12,355	3,598
Dominion	1,454,203	1,341,703	44,382	21,186
Sydney Mines	273,149	245,887	15,650	12,471
North Sydney	4,046	3,993	15	259
New Campbelltown	11,785	10,363	1,617	520
Broad Cove	1,607	939	400	116
Mabou	136	126	....	....
	2,642,333	2,419,137	124,280	51,903

TABLE A.—COAL TRADE BY COUNTIES FOR THE YEAR ENDED SEPTEMBER 30, 1899.

	CUMBERLAND.		PICTOU.		CAPE BRETON.		OTHER COUNTIES.		TOTAL.	
	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.
1st Quarter...........	121,146	114,174	117,311	105,285	316,010	301,059	4,418	4,381	558,885	524,899
2nd "	114,173	103,642	103,711	85,432	359,464	107,012	975	332	578,323	296,418
3rd "	112,635	103,263	117,124	102,774	515,788	482,839	3,192	1,982	748,739	690,858
4th "	89,167	85,199	122,090	116,357	540,136	700,673	4,993	4,733	756,386	906,962
Total...........	437,121	406,278	460,236	409,848	1,731,398	1,591,583	13,578	11,428	2,642,333	2,419,137

TABLE B.—COAL TRADE BY COUNTIES FOR THE YEAR ENDED SEPTEMBER 30, 1899.

	Cumberland.	Pictou.	Cape Breton.	Other Counties.	Total.
Nova Scotia :					
By Land	116,328	198,793	16,942	4,744	336,807
By Sea		40,873	349,079	2,718	392,670
Total N. S.	116,328	239,666	366,021	7,462	729,477
New Brunswick	229,961	42,901	54,527	115	327,504
Newfoundland		131	106,591	33	106,755
P. E. Island		40,604	24,273	2,004	66,881
Quebec	44,577	80,502	902,395	1,814	1,029,288
West Indies		6,044			6,044
United States	15,412		137,776		153,188
Other Countries					
Total	406,278	409,848	1,591,583	11,428	2,419,137

Nova Scotia Coal Sales, 1785 to 1899 (Inclusive.)

Year.	Sales.	Total.	Year.	Sales.	Total.
1785	1,668		1841	148,298	Forw d 1,208,15
1786	2,000		1842	129,708	
1787	10,681		1843	105,161	
1788			1844	108,482	
1789			1845	150,674	
1790		14,439	1846	147,506	
1791	2,670		1847	201,650	
1792	2,143		1848	187,643	
1793	1,926		1849	174,592	
1794	4,405		1850	180,084	1,533,798
1795	5,320		1851	153,499	
1796	5,249		1852	188,076	
1797	6,039		1853	217,416	
1798	5,948		1854	234,812	
1799	8,947		1855	238,215	
1800	8,401	51,048	1856	253,492	
1801	5,775		1857	294,198	
1802	7,769		1858	226,725	
1803	6,601		1859	270,293	
1804	5.976		1860	322,593	2,399,319
1805	10,130		1861	326,429	
1806	4,938		1862	395,637	
1807	5,119		1863	429,351	
1808	6,616		1864	576,935	
1809	8,919		1865	635,586	
1810	8.609	70,442	1866	558,520	
1811	8,516		1867	471,185	
1812	9,570		1868	453,624	
1813	9.744		1869	511,795	
1814	9,866		1870	568,277	4,927,339
1815	9,336		1871	596,418	
1816	8,619		1872	785,914	
1817	9,284		1873	811,106	
1818	7,920		1874	749,127	
1819	8,692		1875	706,795	
1820	9,980	91,527	1876	634,207	
1821	11,388		1877	697,665	
1822	7,512		1878	693,511	
1823	27,000		1879	688,628	
1824			1880	954,659	7,317,430
1825			8881	1,035,014	
1826	12,600		1882	1,250,179	
1827	12,149		1883	1,297,523	
1828	20,967		1884	1,261,650	
1829	21,935		1885	1,254,510	
1830	27,269	140,820	1886	1,373,666	
1831	37,170		1887	1,519.684	
1832	50,369		1888	1,576,692	
1833	64,743		1889	1,755,107	
1834	50,813		1890	1,786.111	13,910,13
1835	56,434		1891	1,849,945	1,849,94
1836	107,593		1892	1,752,934	1,752,93
1837	118,942		*1893	1,485 924	1,485,92
1838	106,730		+1894	2 019,742	2 019,74
1839	145,962		1895	1,831,357	1,831,35
1840	101,198	839,95	1896	2,047,133	2,047,13
			1897	2,013,421	2,013,42
			1898	2,135,397	2,135,39
			1899	2.419,137	2.419,13

Total..................$48,851,16

SUMMARY.

1785 to 1790	14,349	1841 to 1850	1,538,7
1791 to 1800	51 048	1851 to 1860	2,399,3
1801 to 1810	70,452	1861 to 1870	4.927,3
1811 to 1820	91,527	1871 to 1880	7,317,4
1821 to 1830	140.820	1881 to 1890	13,910,1
1831 to 1840	839,954		

***Nine months only.** Fiscal year begins Oct. 1, and ends Sep. 30. (**Cap. 4, Acts 1893**).

Statement of number and classes of men employed at each Coal Mine, during the year ended September 30, 1999.

COLLIERY.	UNDERGROUND.				ABOVEGROUND.				CONSTRUCTION.				TOTAL.		HORSES.		Pits worked.
	Skilled Labor.	Labo'rs.	Boys.	Days' Labor.	Skilled Labor.	Labo'rs.	Boys.	Days' Labor.	Skilled Labor.	Labo'rs.	Boys.	Days' Labor.	Persons.	Days' Labor.	Above.	Below.	Days' App.
Joggins	78	40	10	34,784	8	49	12	19,028	2	13	2	4,527	214	58,339	4	5	269
Springhill	351	295	105	180,783	79	136	33	60,040	....	..	..	....	999	240,823	12	18	241
Acadia	247	219	66	125,432	58	112	38	59,544	....	..	..	....	740	184,976	15	25	232
Intercolonial	166	103	4	94,084	40	73	21	36,764	10	14	3	7,390	504	138,238	9	16	302
Dominion	800	687	186	494,530	170	319	40	137,648	....	..	..	....	2202	632,178	49	125	204
Sydney Mines	396	65	111	162,462	69	109	34	59,736	26	14	2	11,818	826	234,016	9	51	285
North Sydney	18	14	......	1,778	3	2	....	835	3	..	..	131	40	2,744	1	....	257
Mabou	2	2	......	497		....	....	....	2	..	..	75	6	572	....	....	130
Broad Cove	5	3	....	1,207	1	....	....	17	16	5	..	2,847	30	4,071	3	1	157
New Campbelltown	25	15	3	10,557	4	2	2	2,878	....	..	..	....	51	13,435	....	2	246
	2,088	1,443	555	1,106,114	432	802	180	376,490	59	46	7	26,788	5612	1,509,392	102	243	

COAL.

NOVA SCOTIA EXPORTED TO THE UNITED STATES.

Years.	Tons.	Duty.	Years.	Tons.	Duty.
1850	118,173	24 ad.	1875	89,746	75
1851	116,274	"	1876	71,634	"
1852	87,542	"	1877	118,216	"
1853	120,764	"	1878	88.495	"
1854	139,125	Free.	1879	51,641	"
1855	103,222	"	1880	123,423	"
1856	126,152	"	1881	113,728	"
1857	123,335	"	1882	99.302	"
1858	186,743	"	1883	102,755	"
1859	122,720	"	1884	64,515	"
1860	149,289	"	1885	34,483	"
1861	204.457	"	1886	66,003	"
1862	192,612	"	1887	73,892	"
1863	282,775	"	1888	30,198	"
1864	347,594	"	1889	29,986	"
1865	465,194	"	1890	50,854	"
1866	404,252	"	1891	25,431	"
1867	338,492	$1.25	1892	13,883	"
1868	228,132	"	*1893	16,099	"
1869	257,485	"	†1894	79,837	40
1870	168,180	"	‡1895	73,097	"
1871	165,431	"	1896	174,919	"
1872	154,092	75	1897	106,279	"
1873	254,760	"	1898	98,027	"
1874	138.336	"	1899	153.188	"

NOTE.—The quantities given for the years 1852 to 1872 are on the authority of the Board of Trade, Philadelphia, and are probably under-estimated.

*Nine months only.

†NOTE.—After August 1st, 1894, duty on Round Coal 40 cents, on Culm or Slack, 15 cents.

‡Fiscal year begins October 1st, and ends September 30th. (Cap. 4, Acts 1893.)

COLLIERY CONSTRUCTION ACCOUNT, 1899.

COLLIERY.	Shafts.	Slopes.	Levels.	Machinery.	Colliery Buildings.	Dwellings.	Surface Works.	Railways.	Wharves.	Prospecting
Joggins........	$.....	4,734	689	1,524	.....	.....	.....	.....	.....	.....
Springhill......	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Acadia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Intercolonial....	.....	11,990	.....	5,938	224	.....	592	867	1,325	107
Dominion......	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sydney Mines...	14,347	.....	.....	.....	.....	.....	.....	.....	.....	.....
N. Sydney......	.....	454	145	22	35	.....	172	.....	.....	.....
Mabou.........	.....	.....	381	.....	.....	.....	100	.....	.....	209
Broad Cove....	.....	.....	510	630	375	4 550	.....	341	10,533	.....
New Campbelton	.....	464	386	.....	.....	.....	.....	200	.....	200
Total......	14,347	17,642	2,111	8,114	634	4,550	864	1,408	11,858	516

GENERAL GOLD STATEMENT.

Year ending Sept. 30th, 1899.

DISTRICT.	Days' Labor.	Tons Crushed.	Average yield of Gold per ton.			Total yield of Gold.		
			Oz.	Dwts.	Grs.	Oz.	Dwts.	Grs.
Sherbrooke	27516	18437	....	5	13	5118	1	6
Stormont	54712	32794	......	4	22	8099	1	12
Wine Harbor	5103	2031	.....	15	1	1529	17	....
Salmon River	......	12749	.....	1	16	1086	4	2
Montague	1996	1816	......	10	18	976	14	18
Waverley	176	181	......	8	7	75	7	12
Uniacke	12174	1770	.....	11	3	984	17	....
Harrigan Cove	383	387	.....	11	13	223	5	3
Leipsigate	11389	3541	.....	6	13	1161	8	....
Oldham	....	993	.....	13	22	692	3	18
Brookfield	15898	9212	......	6	11	2982	18	5
Caribou & Moose River	13629	13116	......	1	16	954	13	4
Tangier	....	2553	......	7	20	1000	15	....
Blockhouse	....	564	1	14	18	980	......	....
Lake Catcha	5712	1127	......	12	1	678	16	16
Unproclaimed & other Districts.	5283	2851	.....	8	15	1227	19	3
Total	153971	104122	......	......	...	27772	2	3

PRODUCTION BY DISTRICTS FROM 1862 TO 1899.

DISTRICT.	Tons Crushed.	Total Yield of Gold.			Average Yield per ton.			Value @ $19 per Oz.
		Oz.	Dwts.	Grs.	Oz.	Dwts.	Grs.	
Caribou & Moose River	116152	40180	19	19	......	6	22	$ 763,438.81
Montague	25504	40125	7	7	1	11	11	762,381.93
Oldham	46724	51002	4	4	1	1	18	969,041.96
Renfrew	48142	33869	8	2	......	14	2	643,518.68
Sherbrooke	208458	133643	4	....	......	12	19	2,539,220.80
Stormont	117932	58799	18	3	......	7	22	1,117,198.22
Tangier	46398	22534	12	10	......	9	17	428,157 80
Uniacke	54325	38447	16	7	......	14	3	730,508.48
Waverley	122528	61427	2	1	......	10	....	1,167,114 94
Salmon River	108350	40459	11	20	......	7	11	768,732.25
Brookfield	34684	18372	1	9	......	10	14	349,069.31
Whiteburn	6343	9535	15	18	1	10	1	181,179.97
Lake Catcha	22267	23832	14	23	1	1	9	452,822.22
Rawdon	12178	9594	15	10	......	15	18	182,300.65
Wine Harbor	45379	24783	11	2	......	10	22	470,887.53
Fifteen Mile Stream	32893	16226	15	5	......	9	22	308,308.45
Malaga	20243	18496	0	8	......	18	6	351,424.32
Other Districts	66290	46149	17	16	......	13	22	876,847.79
Total	1164790	687481	15	20	......	...	....	$13,062,154.11

MONTHLY STATEMENT FROM EACH GOLD DISTRICT

MONTH.	Harrigan Cove.							Leipsigate.							
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			Silver by Assay
					Oz.	Dwts.	Gr.					Oz.	Dwts.	Gr.	Oz.
October	1			100	30	12	....	1	681	27	381	130	10	....	24
November						....	....	2	707	28	248	66	....	....	12
December						....	....	2	808	31	405	110	5	....	20
January	1	53	2	27	10	8	15	2	1660	66	325	97	....	....	15
February	1	74	3			....	....	2	1342	53	316	99	17	....	15
March	1	256	10	25	21	3	5	2	1388	55	357	117	....	....	19
April						....	....	2	864	34	265	90	....	....	14
May				45	34	6	....	2	878	35	308	135	15	....	14
June				45	32	4	....	2	860	34	312	136	16	....	28
July				65	40	8	15	2	890	35	282	69	15	....	11
August				45	40	2	16	2	823	33	240	68	10	....	12
September				35	14	....	....	2	488	19	112	40	....	....	7
Total		383	....	387	223	5	3	....	11389	....	3551	1161	8	....	191

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	Wine Harbor.							Montague.						
	No. of Mines.	Days' Labor.	No. of Men	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Gr.					Oz.	Dwts.	Gr.
October	2	450	18	80	24	....	....	1	590	23	187	88	19	17
November	2	471	19	116	35	14	....	1	574	23	338	141	11	8
December	2	1307	52	130	34	9	....	1	754	30	99	36	16	20
January	3	885	35	130	119	5	....	1	......	....	70	13	16	....
February	3	960	38	125	120	....	....	1	......	....	123	43	7	16
March	3	1030	41	372	286	2	....	1	15	1	124	103	5	21
April	....	......	....	267	112	10	....	1	48	2	139	102	15	14
May	....	......	....	249	238	14	....	1	15	1	100	98	12	5
June	....	......	....	204	257	....	....	....	......	....	154	89	9	2
July	....	......	....	159	65	15	....	....	......	....	183	108	0	2
August	....	......	....	62	97	4	....	....	......	....	179	87	5	4
September	....	......	....	137	139	4	....	....	......	....	120	62	15	5
Total	....	5103	....	2031	1529	17	....	....	1996	....	1816	976	14	18

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—*(Continued.)*

MONTH.	Sherbrooke.							Salmon River.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Gr.					Oz.	Dwts.	Gr.
October	4	3685	147	1650	405	12	11	....	....	....	....	....	....	....
November	4	3420	136	1570	408	12	....	....	....	....	....	....	....	....
December	4	3391	135	1831	698	12	19	....	....	....	....	....	....	....
January	5	255	10	1253	544	....	....	....	....	....	1100	109	7	12
February	5	231	9	....	....	....	....	....	....	....	2100	262	10	....
March	5	370	14	1391	471	6	....	....	....	....	2738	180	18	11
April	5	2927	117	1704	504	17	....	....	....	....	1279	87	19	2
May	5	2844	113	1798	432	1	....	....	....	....	1482	128	19	10
June	4	2967	118	1729	373	2	....	....	....	....	800	60	3	3
July	4	2344	93	2098	441	14	....	....	....	....	900	72	18	8
August	4	2500	100	1713	451	4	....	....	....	....	850	72	17	11
September	4	2582	103	1700	387	....	....	....	....	....	1500	110	10	17
Total	....	27516	....	18437	5118	1	6	....	....	....	12749	1086	4	2

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—*(Continued.)*

MONTH.	Blockhouse.							Lake Catcha.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Gr.					Oz.	Dwts.	Gr.
October	....	....	....	....	....	....	....	1	305	12	91	37	5	....
November	....	....	....	....	....	....	....	1	464	18	125	37	3	....
December	....	....	....	....	....	....	....	1	488	19	144	44	10	....
January	....	....	....	....	....	....	....	1	405	16	45	46	10	....
February	....	....	....	....	....	....	....	1	389	15	40	37	10	....
March	....	....	....	....	....	....	....	2	417	16	130	64	13	15
April May June July	....	....	....	391	677	....	....	2	604	24	90	44	7	15
						....	....	2	578	23	74	59	12	10
						....	....	2	513	20	110	78	10	....
						....	....	2	437	17	118	106	10	....
August September	....	....	....	173	303	....	....	2	485	19	50	35	15	....
						....	....	2	627	25	110	86	10	....
Total	....	....	....	564	980	....	....	....	5712	....	1127	678	16	16

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	Oldham. No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold. Oz.	Dwts.	Gr.	Brookfield. No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold. Oz.	Dwts.	Gr.
October	1	....	....	....	....	....	....	2	1539	61	783	252	....	....
November	1	....	....	83	62	4	12	2	1728	69	538	186	....	....
December	1	....	....	56	96	3	18	2	1477	59	792	200	....	....
January	1	....	....	....	....	....	....	1	1170	46	882	228	....	....
February	1	....	....	....	....	....	....	1	1242	49	823	201	....	....
March	1	....	....	141	96	8	....	1	1357	54	883	248	....	....
April	1	....	....	94	34	13	....	1	1239	49	810	302	16	....
May	1	....	....	170	80	8	12	1	1178	47	828	427	12	....
June	1	....	....	176	115	13	....	1	1178	47	1027	266	....	....
July	1	....	....	153	113	19	....	1	1492	59	567	183	18	5
August	1	....	....	120	92	14	....	1	1231	49	724	319	5	....
September	1	....	....	....	....	....	....	1	1067	42	555	168	7	....
Total	....	....	....	993	692	3	18	....	15898	....	9212	2982	18	5

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—*(Continued.)*

MONTH.	WAVERLEY.							UNPROCLAIMED AND OTHER DISTRICTS.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Gr.					Oz.	Dwts.	Gr.
October	1	....	....	39	20	12	12	3	843	33	852	258	3	22
November	1	....	....	58	27	19	20	3	319	12	113	95	3	....
December	1	....	....	18	8	6	6	5	1349	53	1248	399	17	14
January	1	108	4	....	....	....	....	4	100	4	52	36	....	....
February	1	56	2	44	11	9	10	2	120	5	120	139	18	....
March	1	12	1	....	....	....	....	3	184	7	66	81	15	....
April	1	....	....	....	....	....	....	4	267	10	76	47	5	....
May	1	....	....	22	6	19	12	5	309	12	41	32	....	....
June	1							4	405	16	99	56	17	9
July		....	....	....	....	....	....	4	396	15	80	31	5	....
August	1	....	....	....	....	....	....	4	153	6	50	16	8	6
September	1	....	....	....	....	....	....	4	838	33	54	33	6	....
Total	....	176	....	181	75	7	12	....	5283	....	2851	1227	19	3

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	Caribou and Moose River.							Tangier.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Gr.					Oz.	Dwts.	Gr.
October	3	1058	42	600	20	....	....	....	....	....	500	203	15	....
November	4	1089	43	230	33	14	....	....	....	....	250	108	5	....
December	4	1296	51	749	30	5	....	....	....	....	365	63	15	....
January	4	944	37	1449	85	....	....	....	....	....	545	242	10	....
February	4	826	33	1643	76	4	....	....	....	....				
March	4	1003	40	1000	59	18	....	....	....	....				
April	5	994	39	878	71	10	....	....	....	....	893	382	10	....
May	5	925	37	1267	157	19	....	....	....	....				
June	7	1216	48	1643	151	7	1	....	....	....				
July	7	1395	55	1530	124	7	12	....	....	....				
August	7	1541	61	1486	90	7	3	....	....	....				
September	7	1342	53	641	54	1	12	....	....	....				
Total	....	13629	....	13116	954	13	4	....	....	....	2553	1000	15	

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—*(Continued.)*

MONTH.	UNIACKE.							STORMONT.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Gr.					Oz.	Dwts.	Gr.
October	1	1644	64	201	133	10	....	7	3237	127	2432	546	6	....
November	1	1670	67	230	138	10	....	7	3451	138	2582	628	17	....
December	2	1294	51	125	92	....	....	8	3627	145	2327	517	11	....
January	2	1002	40	154	89	17	....	8	7508	300	1291	483	11	....
February	2	681	27	100	53	5	....	8	6018	240	3146	491	8	....
March	2	856	34	141	137	6	....	8	7053	282	3314	916	14	12
April	1	877	35	143	63	....	....	7	4415	176	2660	678	1	....
May	1	740	29	105	69	6	....	7	4876	195	3041	784	....	....
June	1	185	7	165	71	7	....	7	5185	207	2766	809	1	....
July	1	1077	43	140	46	16	....	7	5696	227	2950	820	7	....
August	1	1222	48	148	50	10	....	7	5435	217	3072	678	15	....
September	1	926	37	118	39	10	....	7	4695	187	3213	744	10	....
Total	....	12174	....	1770	984	17	....	....	61196	....	32794	8099	1	12

PRODUCTS OF THE MINES EXPORTED.

From January 1st, to September 30th, 1899.

ARTICLE.		The Product of Canada.		Not the Product of Canada.	
Asbestos	Tons.	10	$105		
Coal	Tons.	34,749	106.747	214	$866
Gold bearing Quartz	$		200		
Gypsum, Crude	Tons.	1,070	3,210		
Mineral Water	Gals.	100	14		
Oil, Coal and Kerosene	Gals.			3,221	259
Ores, Manganese	Tons.	52	1,849		
Ores, Other, (Chromic)	Tons.			54	1,350
Plumbago, Crude	Cwt.	27	1,700		
Salt	Bush.			52,824	9,732
Gold in Bars	$		168,853		
Total			282.678		12,207

INTERCOLONIAL RAILWAY.

Statement showing the various kinds of Coal (in tons) received from the different Mines for the use of the Intercolonial Railway from 1st October, 1898, to 30th September, 1899.

MONTH.	Canada Coal & Railway Co., 'Joggins.'		Cumberland Railway and Coal Co., 'Springhill.'				Acadia Coal Company, 'Acadia, Albion and Vale.'					Dominion Coal Co., C. B.	Intercolonial Mining Co., 'Drummond.'				General Mining Association, C. B. 'Sydney Mines.'	
	Run of Mine.	Slack.	Run of Mine.	Slack.	Round.	Nut.	Run of Mine.	Slack.	Round.	Nut.	Coke.	Run of Mine.	Run of Mine.	Slack.	Egg.	Round.	Run of Mine.	Slack.
October, 1898	1850	....	7047	784	....	....	2552	99	....	....	....	4631	1705	....	....	....	451	60
November, "	1869	....	9183	463	....	....	4667	56	30	11	13	8316	1977	....	18	30	642	45
December, "	3557	....	5863	655	....	....	6662	92	100	....	....	....	2588	....	....	12	966	....
January, 1899	1913	....	6397	949	20	....	8530	70	51	....	....	....	2473	....	....	42	637	....
February, "	2361	....	6314	492	34	....	7418	86	....	....	....	....	2287	....	....	....	658	18
March, "	2338	....	5753	282	....	....	9768	32	....	....	13	....	2493	....	....	....	836	....
April, "	427	....	2869	22	....	....	4613	19	....	....	....	....	1774	54	....	....	444	....
May, "	967	....	6320	150	....	202	6252	78	....	....	....	2057	2134	48	....	....	751	....
June, "	3134	....	3704	....	....	215	4591	52	....	....	14	6798	824	....	....	....	645	....
July, "	821	....	4410	....	....	....	4061	108	6	....	6	....	39	....	....	32	500	....
August, "	1774	....	5908	....	....	....	4388	40	....	....	....	....	1904	....	....	....	500	....
September, "	1765	20	7189	....	....	....	5678	39	....	....	....	....	1892	....	....	....	591	....
	22776	20	70957	3797	54	417	69180	771	187	11	46	21802	22090	102	18	116	7621	123

INTERCOLONIAL RAILWAY.

Statement showing the number of Tons of Coal received at the following Stations, from the Mines in Nova Scotia, during the year ended the 30th September, 1899.

Destination.	Tons.	Destination.	Tons.
Halifax Station	64,899	North Sydney	28
Rocky Lake	335	Leitche's Creek	205
Dartmouth	25,460	Sydney	48
Waverley	409	Belmont	19
Bedford	688	Debert	06
Windsor Junction	11,786	East Mines	68
Wellington	27	Londonderry	1,867
Enfield	595	Wentworth	19
Elmsdale	299	Greenville	12
Milford	26	Oxford Junction	13
Shubenacadie	254	Oxford	617
Stewiacke	555	Pugwash Junction	26
Brookfield	103	Pugwash Station	750
Truro	12,569	Wallace	334
Valley	6	Tatamagouche	360
Riversdale	7	Denmark	92
West River	65	River John	63
Glengarry	7	Meadowville	385
Hopewell	1,304	Scotsburn	298
Ferrona Junction	80,027	Pictou	6,957
Stellarton	6,080	Salt Springs	13
Westville	34	Springhill Junction	12
New Glasgow	9,013	Athol	13
Trenton	42,139	Maccan	31
Pictou Landing	37,815	Nappan	20
West Merigomish	36	Amherst	13,471
Merigomish	194	Aulac	434
Avondale	118	Sackville	3.996
Antigonish	3,159	College Bridge	33
South River	20	Dorchester	1,221
Heatherton	67	Memramcook	255
Bayfield	41	Painsec Junction	06
Tracadie	33	Shediac	544
Har au Bouche	50	Point du Chene	47
Mulgrave	960	Moncton	12,565
Point Tupper	146	Salisbury	1,377
Grand Narrows	79	Petitcodiac	463

INTERCOLONIAL RAILWAY—*(Continued.)*

Destination.	Tons.	Destination.	Tons.
Sussex	192	St. Henri Junction	9,102
Apohaqui	19	Chaudiere Junction	597
Bloomfield	32	Levis	616
Hampton	1,236	St. Hyacinthe	2,396
Rothesay	123	St. Lambert	3,652
Cold Brook	2,759	Montreal	34,196
St. John	73,970	G. T. Ry. Via Ch'd're Jct.	963
Kent Junction	247	" " Montreal	130
Rogersville	20	" " St. Rosalie	577
Chatham Junction	14,158	C. P. Ry., " St. John	3,959
Millerton	126	" " St. Rosalie	31
Indiantown	16		
New Castle	151	Total	502,637
Gloucester Junction	761		
Bathurst	20	SUMMARY.	
New Mills	17		
Dalhousie Junction	7	Stellarton	203,792
Dalhousie	190	Westville	13,845
Campbellton	459	New Glasgow	5,759
Metapedia	2,147	Ferrona	231
Rimouski	148	Albion	13,397
Bic	16	Sydney	69,523
St. Simon	6	Springhill	166,765
Trois Pistoles	15	Maccan	29,325
Riviere du Loup	3,465		
Montmagny	45	Total	502,637

PRODUCTS OF THE MINE SHIPPED FROM THE PORT OF PICTOU, N. S., DURING THE YEAR ENDING, SEPTEMBER 30TH, 1899.

	AMOUNT.		VALUE.
Coal	1486	Tons	$2865 00
Coke	3½	"	10 00'
Mineral Pigments	300	Lbs.	3 00
Gold Bearing Quartz			55 00
Ores other	1240	Tons	25 00

GEO. E. JOHSTONE,
Pro Collector.

PORT OF AMHERST, N. S.
Nov. 27th, 1899.

From Sept. 30, 1898 to Sept. 30, 1899.

Building Stone, 1051 Tons	$ 4,469 00
Grindstones	8,505 00
	$12,974 00

W. D. MAIN,
Collector.

MIDDLETON, N. S.,
Nov. 25th, 1899.

To E. GILPIN, JR.,
Halifax.

DEAR, SIR,—

Your card to hand re products from Mines shipped from this port

The only thing is $3,300.00 Gold Bullion.

Yours truly,
L. P. SHAFFNER,
Collector.

PORT OF TRURO, N. S.,
Year ending 30th Sept., 1899.

Gold	1,238 oz	$23,536 00
Silica	786,500 lbs	8,353 00

LUNENBURG, N. S,
Nov. 27th, 1899.

To E. GILPIN, JR., ESQ.,
Inspector Mines,
Halifax, N. S.

DEAR SIR,—

In response to your Postal Card of 17th inst., I beg to give below quantities and values of output of Mines shipped from this County, all the ports of which are under my survey. The only item is Gold Bullion.

		Oz.	VALUE.
Quarter ending	Dec. 31, 1898	602	$11,119 00
"	March 31, 1899	347	6,550 00
"	June 30, 1899	2,285	42,370 00
"	Sept. 30, 1899	1,876	33,695 00
		5,110	$93,734 00

Yours truly,

A. B. COLDWELL,
Collector.

REPORT

OF THE

DEPARTMENT OF MINES,

NOVA SCOTIA,

For the Year ending 30th September, 1900.

HALIFAX, N. S.:
COMMISSIONER OF PUBLIC WORKS AND MINES: KING'S PRINTER.
1901.

J. [illegible], Herald Printing House, Halifax, N. S.

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6 JUNE 1910

DEPARTMENT OF MINES.

REPORT FOR THE YEAR ENDED SEPTEMBER 30, 1900.

To His Honour THE HONOURABLE ALFRED GILPIN JONES,
Member of the Queen's Privy Council for Canada,
Lieutenant-Governor of Nova Scotia, &c., &c.

MAY IT PLEASE YOUR HONOUR,—

I respectfully present herewith to Your Honour the Annual Report of the Inspector of Mines, containing an account of the progress of mining operations, together with statistical information compiled by him from official and other returns.

I remain,
Your Honour's obedient servant,
CHARLES E. CHURCH,
Commissioner of Public Works and Mines.

HALIFAX, *January 3, 1901.*

REPORT

ON THE

MINES OF NOVA SCOTIA,

BY EDWIN GILPIN, JR., A. M., LL. D.,

FELLOW OF THE ROYAL SOCIETY OF CANADA. ETC., ETC.

OFFICE OF INSPECTOR OF MINES,
HALIFAX, *December 29th, 1900.*

TO THE HONOURABLE
CHARLES E. CHURCH, M. P. P., M. E. C.,
Commissioner of Public Works and Mines:—

SIR,—I beg leave to submit the following report on the Mines of Nova Scotia.

The following summary shows, so far as I have been able to learn, the mineral production of Nova Scotia for the year ending September 30th, compared with that for the year ending September 30th, 1899.

	Year ending Sept. 30, 1899.	Year ending Sept. 30, 1900.
Gold .... oz	27,772	30,399
Iron Ore*† .... Tons	16,169	15,507
Manganese Ore†.......... "	100	8
Coal raised†............. "	2,642,333	3,238,245
Coke made†............. "	55,484	62,000
Gypsum†‡	140,000	122,281
Grindstones, etc.§	50,000	56,500
Limestone† .... Tons	32,000	50,000
Barytes.......................	335	783
Tripoli and Silica	893	1,100
Copper Ore....................	400	600

* Not including imported ore.
† Ton of 2,240 lbs.
‡ Amount exported.
§ Value in dollars.

NOTE.—Further details will be found in the tables at end of report.

During the past year surveys have been made at Oxford, in Cumberland County; Cheticamp, Inverness County; Dalhousie Mountain, New Lairg, Pictou County; Mt. Uniacke, Hants County; St. Peters, Richmond County; Polson Lake, Lochaber, Arisaig, Antigonish County; Sherbrooke, Upper Seal Harbor, Country Harbor, Wine Harbor, Salmon River, Harrigan Cove, Tangier, Cow Bay, Mill Village, in the Counties of Halifax and Guysboro; and Salmon River, Barasois, in Cape Breton County.

The collection of minerals referred to in my last report was forwarded to the Paris Exhibition in conjunction with the exhibit of the Canadian Geological Survey. I am informed that the minerals exhibited contributed materially to the admitted success of the mineral exhibit of Canada.

The removal of the Museum to the Burns & Murray building has been completed. The exhibits are being classified and labelled, and considerable progress has been made in collecting a representative exhibit of the natural resources of the Province. It had been arranged that, at the close of the Paris Exhibition, the Nova Scotia minerals should be returned to the Provincial Museum. However, it was decided that they should be removed by the Canadian Geological Survey with the remainder of their exhibit, and displayed at the Glasgow Exhibition of 1901. It is expected that most material advantages will be derived from the exhibition of our minerals at this important industrial centre. The room over the Museum has been fitted with shelving, etc., for a reading room, and a library of reference for scientific and technical literature. In it are being installed the large library of the Nova Scotia Institute of Science, and that of the Nova Scotia Mining Society, and the technical books of the Legislative Library. It is expected that with a small annual expenditure there will soon be a reference library in Halifax meeting all the local requirements in technical and scientific literature.

The usual examinations have been held for granting certificates to managers, underground managers, engineers, and miners.

The following list gives the names of those receiving certificates as managers, etc.:—

UNDERGROUND MANAGERS.

Name.	Address.
Duncan G. McDonald	Old Bridgeport, Cape Breton Co.
G. J. Guilliam	Springhill, Cumberland Co.
Wm. A. Wilson	" "
Wm. B. Embree	" "
Kent Foster	" "
Wm. T. Chew	Westville, Pictou Co.
Wm. T. Hamilton	" "
Patrick Walsh	Bridgeport, Cape Breton Co.
Malcolm Stewart	Sydney Mines, Cape Breton Co.
Robert Dickson	" "
Neil A. McDonald	Bridgeport, Cape Breton Co.
Robert B. Crosby	" "

OVERMEN.

Name.	Address.
R. T. Wilson	Caledonia Mines, Cape Breton Co.
Thomas Brown	Port Morien, Cape Breton Co.
John McDonald	" "
Wm. B. Murray	Springhill, Cumberland Co.
Duncan Blue	" "
Moses Walsh	" "
Wilfred White	" "
A. K. Stewart	Westville, Cumberland Co.
Neil McKay	Thorburn, Pictou Co.
Wm. T. Bruce	" "
John Allan McDonald	Sydney Mines, Cape Breton Co.
John D. McDonald	Bridgeport, Cape Breton Co.
McCuish, James	" "

Engineers' Certificates issued September 13th, 1900:—

THIRD CLASS.

Name.	Address.
Willard A. Mills	Joggins Mines, Cumberland Co.
James Blackwood	" "
Zediska Bowlsby	" "
Daniel A. McPherson	Little Glace Bay, Cape Breton Co.
John M. Morrison	" "
Archibald Morrison	" "
Wm. J. Whalen	Sydney Mines, Cape Breton Co.
Isaac Oram	" "
Daniel A. Hartigan	" "
Laughlin McInnes	Dominion No. 1, Cape Breton Co.
Percy Waddington	Port Hood, Inverness Co.
Alexander McInnis	Broad Cove, Inverness Co.
James Armour	Westville, Pictou Co.
George Walters	" "
A. Hayman	" "
Alex. Sutherland	" "
Henry Court	" "
Richard Saunders	" "
Alfred Workman	" "
John Egan	Sydney Mines, Cape Breton Co.

SECOND CLASS.

Philip Smith	Port Morien, Cape Breton Co.
Walter McAuley	" "
Chester Bowlsby	Joggins, Cumberland Co.

COAL TRADE.

The returns of Coal sold during the year 1900 show, in comparison with those of 1899, as follows:—

	1899.	1900.
Nova Scotia	729,477	863,900
New Brunswick	327,504	406,519
P. E. Island	106,755	99,307
Newfoundland	66,881	68,103
Quebec	1,029,288	934,229
West Indies	6,044	......
United States	153,188	624,273
Other Countries	......	1,215

The production was 3,238,245 tons compared with 2,642,333 tons in the year 1899.

The total sales were 2,997,546 tons compared with 2,419,137 tons in 1899.

There is an increase in the sales to all points, except Quebec and P. E. Island. The exports to the United States steadily increased during the summer, and are the largest on record.

CUMBERLAND COUNTY.

During the past year the production was 496,804 tons, compared with 437,121 tons during the preceding year. Of this amount 428,904 tons were furnished by the Springhill Mines, and the balance by the Joggins.

The operations in this county are fully described in Mr. Blue's report. The mines were the scene of increased activity and development. A number of small mines in the vicinity of the Maccan and Hebert Rivers worked intermittently. Many of these mines do not make the returns required under the Act, and your attention has been called to the matter as one requiring the adoption of severe measures.

and the exploratory work of the Cumberland Railway and Coal

little progress has been made in tracing the extensions of this

PICTOU COUNTY.

There have been no operations calling for special notice. The mines have worked more steadily and the production was as follows:—Acadia, 294,884 tons; Intercolonial, 24;4,000 tons, as compared with 258,680 tons and 201,556 tons, respectively, during the year 1399.

I beg to append herewith report of Mr. Malcolm Blue, Deputy Inspector, on the mines of Cumberland and Pictou Counties as visited by him during the past season.

SPRINGHILL, Sept. 30th, 1900.

To E GILPIN, *Inspector of Mines, Halifax. N. S.*

DEAR SIR,—

I beg to submit herewith a report on the coal mines of Cumberland and Pictou Counties for the fiscal year ending 30th September, 1900.

NO. 2 SLOPE, SPRINGHILL.

The principal work in this mine has been the extension of the 2,300 feet levels, and the driving of several places to rise on both sides of the slope. The east level has been extended during the year 700 feet, making a total length of 4,200 feet. About 3,500 feet from the slope bottom a fault was struck which proved to be a downthrow of 57 feet. This trouble was successfully pierced, and the No. 1 seam tapped, but contrary to expectation, it was found to have split, and it showed from four to five feet of coal in each bench, with 30 feet of metals separating them.

When the lower seam levels had been extended 500 feet beyond the fault, a stone tunnel was started to No. 2 seam. At 150 feet distance this seam was tapped, showing 9 feet 6 inches of clean coal. None of these seams have been worked to rise, of this section, except No. 2, which had a few narrow places driven while No. 5 slope was in operation.

The two setts of levels in No. 1 seam are now being opened up with a view to connect them further to the rise for ventilating purposes. The over seam levels have been extended 800 feet, and several places have been driven uphill to the trouble, averaging from 100 to 400 feet in length. The lower seam levels have advanced 1,300 feet, and have several chutes in operation to the rise.

On the west side of the mine the levels were driven 1,881 feet, or a total distance of 4,785 feet. A number of chutes and one balance are now operating to the rise. This level has been driven much farther than those of the lifts higher up. The coal is remarkably clean and lies at an angle of 45 degrees. The balance was constructed to take the top lift coal down to the main level. Considerable repairing work has been done to the airways and returns, and they are at present in good condition.

The new Capell fan, which began running on December 8th, 1899, is giving good satisfaction.

NO. 3 SLOPE.

The extraction of pillars has been carried on to the east and to the west of the 1,900 feet landing. This lift will be finished in the course of a few months. The west levels of the 2,600 feet lift have been extended 2,640 feet, a total distance of 8,118 feet. Several places have been driven uphill; one for a return airway, which is about 100 feet inside the face of the 1,900 feet levels, and connection was made by cross-cutting. There it was found that the coal was much superior to expectations, and the extension of the 1,900 feet levels was at once resumed. About 8,000 feet from the slope a balance has been started. This will be the first opening of any note on this lift.

The east side levels in the under seam have been extended a considerable distance, but are not in operation at present. Owing to the increasing size of the lift on this side of the mine, the management were obliged to cut it in two by driving another level halfway. To this halfway level three incline planes have been driven and put in operation. From this level several chutes have been extended to the level above, and bords turned off in each direction, viz., east and west. A large block of coal has been successfully worked out in this district.

The west levels of the 3,200 feet lift have been extended 2,110 feet, making a total distance of 4,554 feet, with but a few openings to the rise for ventilating purposes. On the east side the under and overlying seams have been extended 2,898 feet, and considerable coal worked out in the latter. In the 2,600 feet level rope haulage is now used. The inbye station at present is about one mile from the main slope, and preparations are now being made to extend the present station 2,000 feet further. A haulage system is under construction in the 3,200 feet level, and will soon be in operation.

Below this level 1,300 feet of water lodgment has been made, securely timbered, top, sides and centres. Five feet concrete dams are placed on each side of the slope and are connected with a 12-inch pipe, from which a new Jeansville pump will get her supply. This pump stands on a level with the lodgment, and is of the following dimensions: 22 inches by 40 inches, 10 inches by 36 inches, with a vertical duty of 1,000 feet. Seventy pounds pressure will discharge 700 gallons per minute at the 1,300 feet level. A new line of 8-inch steam pipe, 2,000 feet in length, connects with the boilers on the surface and to the 6-inch pipes at the 1,600 feet station. Two 8-inch by 10-inch by 12-inch duplex independent condensers, made by the Jeansville Company, are placed at the 1,300 and 3,300 feet pumps.

On the surface four return tubular boilers have been added to the battery. These boilers, 5 feet in diameter and 30 feet long, are duplicates of the eight already in operation. An additional open heater supplying water at 210 degrees has been installed, together with a feed pump 8-inches by 5-inches by 8-inches.

A concrete foundation is now being built at this pit for a new Capell fan, 15 feet diameter, 5 feet blades, capacity 150,000 cubic feet per minute; diameter of the orifice, 8 feet 8 inches. It is to be driven by a compound condensing engine, 20 inches by 18 inches direct, coupled to the fan shaft.

JOGGINS MINES.

NO. 2 SLOPE.

The main slope was sunk about 300 feet further, and levels were started off east and west. The west level has been driven 500 feet, and has several jigs and gateways in operation on a longwall method. The east levels have been extended 700 feet, and have one balance with four bords in operation. This level has successfully pierced a downthrow fault of 20 feet, and the seam is being rapidly developed inside of it. Longwall work is to be opened up at once.

The Jeansville pump is now placed permanently at the 2,500 feet lift bottom, and the water from this slope and from No. 3 slope can easily be discharged into the drain at the 600 feet level.

Ventilation is moderate, and as the mine increases in size will be inadequate. The main slope is the intake, while the pipe bord, which has a much higher temperature, is the natural return.

NO. 3 SLOPE.

The principal work carried on here is from the 2,500 feet levels. These places have been advanced east and west 300 feet respectively. Two balances have been about worked out on the east side, and the third is now in course of construction. This balance has 16 bords, with 35 feet walls, and over 500 feet of a continuous working face along which air travels.

On the west side of the mine No. 2 balance bords are nearly driven, and another balance is about to be started. This balance has 12 bords, 35 feet of wall each, and two more bords are contemplated. Considerable work was done on the 1,900 feet levels. Bords were extended on No. 6 balance, and several jigs were started farther east. Levels were also driven some distance. The stone increased so rapidly that the lift was stopped early in the spring.

One of the pumps taken from No. 2 slope has been installed at the 2,500 feet level, thereby doing away with the expensive tank system of getting water out, which has been in operation here for several years. This water is discharged into the 1,900 feet low level, and runs from there to No. 2 slope pump. The steam pipes are placed in the return airway. The management has given much attention to the return airways, also to repairs on the main slope.

An efficient system of water works for the collieries has been in operation for the past three months. Water is pumped from McArron's brook, a distance of fully one mile, to No. 2 slope, and thence a further distance of half a mile to the No. 3 slope. This does away most effectually with the stoppage for feed water, which so seriously hindered operations in the past during the dryer season of the year.

As the quality of the new supply of water is much superior to that formerly used, the internal condition of the boilers, etc., has been markedly improved.

RIVER HEBERT MINE—Mr. Alfred Babin, Foreman.

The slope, 5 feet by 10 feet, is 232 feet deep, at an angle of 22 degrees. It is sunk on what is known as the Minudie seam, 4 feet 6 inches thick, carrying 9 inches of soft stone in the centre of the coal. At the 70 feet station, levels were driven east and west, 82 feet and 131 feet respectively, and some coal worked out to the rise on the bord and pillar method.

Level No. 2 is driven on the east side only, and extends in this direction 206 feet, and the coal worked uphill from 30 to 60 feet by longwall. There are no openings made to the westward at this point, on account of old works which are not more than 700 feet distant, and are at present full of water. Water is taken out of the mine by a steam pump, placed at the bottom of the main slope, and supplied with power by a vertical boiler of 25 horse-power. The coal is hoisted at present by a whim, but a combination boiler and engine of 12 horse-power is now being installed, and when in operation it is expected to greatly increase the present output of 25 tons a day. A siding for loading coal has been constructed on the Joggins railway, near which this mine is situated, and about half a mile eastward from River Hebert station.

SMITH'S MINE, MACCAN.

Mr. G. J. Harrison employs from four to six men. The slope was sunk 100 feet during the year, giving a total distance of 280 feet, at an angle of 50 degrees, south dip. Levels have been turned off east and west, 30 feet. In lift No. 2, west levels were driven 300 feet, and considerable coal worked out to the rise. A short distance from the slope and on the east side the coal divided. Levels were carried on in upper and lower levels for 300 feet, and some openings were made to the rise. The workings were abandoned at this point for want of facilities for handling the product.

JUBILEE MINE.

Mr. U. J. Weatherbee carried on some mining during the year, employing from four to six men. The west levels, No. 2 lift, were driven 425 feet, and all this ground worked out uphill. The main slope was sunk an additional 60 feet, and a pipe bord driven. No. 3 lift levels have been extended east and west 100 feet and 75 feet respectively. There are a few places driving uphill.

CHIGNECTO MINE.

There was no mining of any note done at this mine during last year. Only two men are employed, and they also attend to the hoisting and the surface work. Levels were extended a short distance and tunnels driven to the under seam some four to six feet distant. The slope was sunk about 30 feet deeper, and new levels turned away. For a prospect verything about this mine is in good condition.

SCOTIA MINE.

This slope is now sunk 180 feet, and there are three places driven west from 200 to 300 feet. A tunnel was driven to the under seam, a distance of 10 feet, and levels are being driven east and west. Two places were driven east on the main slope a short distance, and an opening 60 feet long was made to the old west level for ventilating purposes.

PICTOU COUNTY—ACADIA COLLIERY.

Early in April, 1900, the main bottom was removed from No. 9 to No. 10 lift. The coal mined on the upper lift is run down via the sinking slope, all hoisting being done from the low or No. 10 lift. The south levels have been driven to the boundary, a distance of 4,300 feet, and coal is now being extracted along the boundary to upper lift. Also on the low side of this lift outby, about 2,000 feet, this coal is lowered to No. 10 level by five plainways. On the north side the two chutes mentioned in last year's report have been driven to the top level and two more chutes started. The coal between the two outside chutes and 200 feet outside the first one has been taken out from the top down to within 140 feet of the main level. The airways between Nos. 10 and 6 lifts have been considerably repaired, and the ventilation throughout is in fairly good condition.

ALBION MINES.

Third seam slope.—The west levels of the new sinking in this seam are driven a total distance of 3,136 feet, with no openings to the rise. East of this lift the main levels have been idle for over a year, and no mining of any note carried on, except that an opening for a return airway was driven to the upper levels, and a counter level is now driving parallel to the main level. This will so arrange the ventilation that return air will get out of this district without coming in contact with the staple shaft. This shaft is sunk from the cage pit seam to the third seam, 121 feet, and measures 5 feet inside the timber. It is intended to supersede the cross tunnel system of transportation, and the coal will be lowered from the top to the bottom seam down this shaft. Thence it is a short distance to new lift bottom. When in operation it will at once make a saving of about 3,000 feet of haulage. It is also used for pumping purposes. A rope-geared pump is placed in the third seam and the water is forced up this shaft. From this point it is easily led, together with other mine water, into the Foord pit.

The east levels, iron door sinking, cage pit seam, have been driven a considerable distance, and are now within 400 feet of the English slopes. Two balances, Nos. 1 and 2, have been turned away. No. 1 is in full operation, working the overlying seam 4 feet thick, on the longwall method. No. 2 balance is yet driving. Little work was done west of this district. Levels were driven a short distance, and No. 2 balance started.

At the borehole sinking the west levels were extended a short distance, and No. 3 balance is driven up to the fourth bord. No coal of any consequence has been mined in this district, but east of the sinking, No. 1 balance is operating ten bords in the overlying 4 foot seam, on the longwall method. On main level west the extraction of pillars has been carried on in No. 6 balance. An opening has been made from No. 5 balance into the lower workings of the old cage pit. The mine bord and main level have been successfully crossed, and sufficient and effective stoppings built to allow the continuation of a balance and back head to the shaft levels.

When these old openings were first entered there were found boxes, road, tools and canvas in as good condition as when they were abandoned twenty years ago.

McGREGOR PIT.

The only work done in No. 5 lift is in 6 balance, where 9 bords were driven on each side, and pillars at top of balance were about extracted, when a heavy pressure began to be felt, resulting in the loss at present of bottom pillars. This crush was partly caused by pressure from the overlying Fleming seam, 4 feet thick, which has only 6 feet of shaley matter between it and the McGregor seam. From any examination that could be made there was nothing to indicate that the upper seam had fallen.

For some weeks after the loss of the balance gas came out from this district in large quantities. An effort is now being made to recover these pillars, and with this end in view an opening has been driven on both sides of the balance and No. 1 pillar reached. The position looks promising, and there is no doubt but that these pillars will be taken out later. The east levels on lift No. 6 have been driven 100 feet, and two balances completed. The west levels have reached the 2,044 feet mark, and a balance is now driving at 1,659 feet from the bottom. This is the first opening on this lift on the west side.

Some work has been done on No. 7 lift, and at present the west levels are in operation, but everything was at a stand here for the greater part of the year. A new hoisting engine, 16 inches by 30 inches, 9 feet drum, geared 3 to 1, has been set up and a commodious engine house built.

THORBURN—VALE COLLIERY.

The main workings of this mine are on the north dip, or engine plane, which was sunk this year 1,000 feet, giving a total length of 2,500 feet. Some time ago this planeway was converted from a single to a double-geared machine, and it is now successfully working from the three lifts, viz., 1, 2 and 3.

The east side levels of No. 1 have been stopped, and the bords in No. 1 and 2 balances are worked out. The third balance was driven up and bords started off for a short distance. Level No. 2 has been extended 800 feet from planeway, and a balance is driven up from

DATE OF OFFICIAL INSPECTION.

MINE.	LOCALITY.	COUNTY.	1899.			1900.								
			Oct.	Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.
Springhill, No. 2	Springhill	Cumberland	16	7	13	18	5	20	10	17	6	4	18	17
" No. 3	"	"	20	6	12	17	6	19	11	18	5	3	17	18
Joggins, No. 2	Joggins	"	17	9	21	24	21	6	26	21	25	6	Idle	19
" No. 3	"	"	17	9	21	24	21	6	26	21	25	5	28	19
River Hebert Mine	River Hebert	"	....	....	....	26	....	......	27	23	26	5	28	19
Jubilee Mine	Maccan Dist.	"	Idle	....	22	25	....	7	28	22	26	7	29	27
Smith's Mine	"	"	18	10	22	25	22	7	28	22	26	7	18	19
Scotia Mine	Chignecto	"	18	10	22	25	22	7	28	22	26	7	18	19
Chignecto Mine	"	"	18	10	22	25	22	7	28	22	26	7	18	19
Acadia	Westville	Pictou	12	17	7	11	12	14	17	10	12	14	8	12
Drummond	"	"	10	14	6	10	10	13	19	8	14	10	3	14
Scott Pit	"	"	10	14	4	10	10	12	21	12	14	10	4	11
No. 4 Slope	"	"	....	....	....	....	....	......	......	....	....	....	4	11
Third Seam	Stellarton	"	11	15	5	9	9	15	18	9	13	11	6	13
McGregor Pit	"	"	11	15	5	9	9	17	18	9	15	13	7	13
Vale Colliery	Thorburn	"	13	16	8	12	13	16	20	11	16	12	9	15

AMOUNTS OF AIR CIRCULATING AROUND WORKING FACES AS PER MEASUREMENT AT EACH OFFICIAL VISIT.

Mine.	County.	1899.			1900.								
		Oct.	Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June.	July	Aug	Sept.
Springhill, No. 2...	Cumberland	36000	41400	34800	45000	39000	44400	53400	42000	48000	54000	51000	60000
" No. 3...	"	60000	88160	76000	94200	82800	80200	74400	79000	79000	76600	74000	70800
Joggins, No. 2.....	"	14000	14000	15000	15500	14600	11400	13110	8550	8000	9990	Idle	6900
" No. 3.....	"	13250	15000	15000	12000	17000	15540	16000	11000	10000	12600	11760	5600
Jubilee Mine......	"	......	......	2200	2640	1000	......	1540	1300	1100	1000	......	......
Smith's Mine	"	2020	4080	3200	2080	6000	4800	2720	1500	1200	900	......	......
Scotia Mine	"	......	1200	4000	3500	11000	7000	7500	3000	2000	2000	......	......
Chignecto Mine ...	"	......	600	1200	1200	......	1150	900	800	850	500	......	......
Acadia	Pictou	23100	30600	25956	31080	26880	30240	22000	32760	27720	27900	33480	31500
Drummond	"	41475	44400	......	61455	44476	59430	48480	52680	37560	34875	39870	40800
Scott Pit.........	"	27520	21080	25000	31500	33390	33390	34880	30870	27720	22400	29610	14000
No. 4 Slope.......	"	......	......	......	......	......	......	......	......	......	......	......	14000
Third Seam.......	"	52900	94500	96000	97750	80500	89320	81650	76560	69600	69600	75400	69600
McGregor Pit	"	52800	53110	56000	60160	44800	46720	45440	38400	38400	35164	33920	40320
Vale Colliery	"	27000	29300	27780	31800	30400	29000	30230	30000	30000	28000	27000	27500

ACCIDENTS.

No.	Date.	Mine.	Name.	Occupation.	Remarks.
	1899.				
1	Nov. 13	Vale Colliery ..	Dougald Grant.....	Laborer	Fatally injured by gas explosion.
2	" 29	Drummond	John D. McKenzie..	Engine Driver.	Wrist broken, fell into a drum pit.
3	Dec. 1	"	J. W. Workman....	Miner........	Fracture below knee, getting on riding rake in motion.
	1900.				
4	Jan. 6	Albion Mines ..	John D. Small	Miner........	Killed by a fall of top coal at working face.
5	" 6	Drummond	J. D. Simpson......	Driver	Arm broken, caught between box and rib.
6	" 11	Acadia	Peter Chappelle	Slopeman	Hand badly crushed, run over by trolley in main slope.
7	" 22	Springhill, No. 2	Malcolm Beaton....	Miner........	Leg broken, run over by a full rake.
8	Feb. 5	Drummond	Chas. McIntosh	Cage Runner..	Seriously injured, caught on balance by an empty box.
9	" 7	"	Gilbert McPherson..	" ..	Killed, wound on drum barrel under rope.
10	" 9	Springhill, No. 2	William McInnis ...	Driver	Seriously injured, caught between horse traces and rake.
11	" 15	" No. 3	John Milley	Laborer	Fatally inj., struck and run over by rake on main slope.
12	April 14	" No. 3	Wm. Cargig	Miner........	Fatally injured, fell on pick handles.
13	May 22	" No. 2	Wm. Lowther......	"	Leg broken, fall of stone in working face.
14	" 28	Drummond	John McCuish	"	Leg broken, fall of coal at working face.
15	June 2	"	Angus Russel......	"	Lost an eye, struck by splinter from steel wedge.
16	July 20	"	T. J. Gray.........	Slope Boy....	Leg broken, slope rope.
17	" 30	"	Thos. Baker	Overman	Killed, riding rakes derailed, and ran over him.
18	Sept. 17	Third Seam....	A. J. McDonald	Cage Runner..	Leg broken, cage derailed.
19	" 10	Acadia	Robert McKenzie...	Shiftman.....	Arm broken, hit with a rope.

TIMBER USED AT SPRINGHILL COLLIERIES FROM OCT. 1ST, 1899, TO SEPT. 30TH, 1900.

BOOMS:	14′ × 10″	14′ + 6″	12 × 9″ × 10″	10½ × 9″	10′ × 6″	split
	442	6687	1069	6608	12721	44145

PROPS:	12′ × 5″	10′ × 5″	5½ × 5″
	15145	26723	95958

Pine	13,112	Feet.
Plank	124,498	"
Boards	383,069	"
Scantling	168,568	"
Spruce Timber	87,665	"
Roller Wood	5,530	"
Hardwood	50,148	"
Pit Pinning	1,136	Dozen.
Slabs 6 ft.	32,320	"
" 12 "	4,835	"
Cap Pieces	50,430	"
Dynamite	3,005	Pounds.

CAPE BRETON COUNTY.

The sales from this county amounted to 2,041,806 tons, compared with 1,731,398 tons in 1899.

The property of the General Mining Association of London, generally known as the Sydney Mines, was acquired by the Nova Scotia Steel Company. By this sale the G. M. A. has disposed of the last of its lease properties, and now disappears from the mining record of the Province. It is a matter of common knowledge that the acquisition of the mines of the Province by this company led to the first practical development of our mineral resources. About the year 1827 they opened collieries at the Joggins, New Glasgow, and North Sydney. Their operations were conducted on a large scale, conduced materially to the prosperity of the country, and set a high standard of business integrity and morality.

It is understood that the Nova Scotia Steel Company has in contemplation the erection of blast furnaces at North Sydney. In view of the increased demand thereby arising for coal, explorations and surveys are being made in the Boularderie district for the purpose of determining a suitable point for opening the coal deposits on that island. The company is building a washer and some coke ovens at the Sydney Mines. They propose to send the coke to their furnace at Ferrona, and later to increase the number of ovens, etc., in connection with the furnaces.

The Dominion Coal Company has continued improving its property. The new shafts have been sunk to the Harbor seam, where a winning will be made, and are being continued to the Phalen seam. A new slope is being sunk on the Phalen seam, west of the Caledonia Colliery, and one on the Emery seam in the same locality.

The Gowrie & Blockhouse Collieries Company has continued driving its submarine drifts, and has sold a little coal.

There has been little or no prospecting work done in this coal field during the past year. In the fall arrangements were made to put one of the drills purchased by your Hon. Government at work near Pottle's Lake, North Sydney, in search of the extension of the Mullins seam, on the north side of the harbor.

Some boring and other exploratory work was done in the Salmon River district, but no details have been made public. The existence of a basin with some small coal seams has long been known here, and work may show the presence of larger beds.

I append the report of Mr. P. Neville, Deputy Inspector for the Island of Cape Breton:—

E. GILPIN, Jr., Esq.,

Deputy Commissioner and Inspector of Mines.

Dear Sir:—

I beg leave respectfully to submit my report to you on the coal mines in the Island of Cape Breton for the fiscal year ending 30th September, 1900. ;

GOWRIE AND BLOCK HOUSE COLLIERIES, LIMITED.

In my report for last year I mentioned that the McAuley or Gowrie seam was reached in 190 days. The shaft was cribbed 60 feet from the surface with 10x10 inch hardwood, and had concrete on top as far down as the solid rock. Notwithstanding, part of it gave way, owing to the heavy pressure of water, and perhaps a flaw in part of the wood, but luckily no person was injured. Mr. Hudson was employed shortly after as General Manager, and had crib-rings, five inches thick and nine inches deep, put in, of the best of hardwood. These rings are put in three feet apart, and are fitted to the inside circle of the shaft. Work was resumed and the level started from the pit bottom to the iron post, at the shore, and extended 100 feet further under water, when three deeps were broken off. These deeps are driven 12 feet in width, with a pillar 33 feet thick between each one. The rooms are being broken off the upper deep, and are 22 feet wide, with a pillar 28 feet thick. These rooms are being driven 140 feet long, and then stopped to insure greater stability of pillar.

The air is conducted to the faces by brattice. I have advised them to make a small opening along the faces instead, as I consider that it would not lessen the strength of the pillar or affect the roof. The coal looks remarkably good as the deeps advance. There are two Ingersoll coal-cutting machines and six pairs of hand cutters, the daily output being now at the rate of 100 tons. The mine is ventilated by a fan which gives satisfaction. Since the cribbing was completed very little water has been encountered. A water tank suspended under the hoisting cage keeps the mine clear from water. The stone drift starting from the head of the middle deep is progressing favorably. This stonedrift is being driven to the surface for the purpose of hauling coal to a new bankhead and screens which will be erected, and then the present shaft will only be used as a man-ventilating and pumping-shaft.

SURFACE ARRANGEMENTS.

A hoisting engine with two cylinders, 12 1-4 inches by 18 inches in diameter and a 4 feet 6 inch drum, has been erected, a duplex air compressor, 12 inches by 15 by 16 inches, put in, and it supplies air for eight machines and the deep pump. Three Ingersoll boilers of 75 horse-power each have been installed with dam on McAuley's brook. One compound duplex Jeansville pump, size 9 inches by 14 inches by 6 inches by 12 inches has been procured.
placed at the shaft bottom. There is a deep pump
e Northey Manufacturing Company; steam cylin-

der 10 inches diameter, 12 inches stroke; water end 4 1-2 inches diameter, 12 inch stroke. A new bankhead and screens have been built. The screens have bars 15.0 inches long, and are put in at an angle of 32 degrees. All the works are lighted by electric light, including the pit bottom and part of the level. The dynamo is capable of running 250 sixteen candle-power lights.

SHIPPING.

The wharf is situated 1,000 feet from the shore, having 14 feet 6 inches of water at low tide. It contains four pockets, each having a capacity of 90 tons. This section of the pier is designed for schooners only. The wharf is to be extended 200 feet further. The system of shipping here is known as the Aerial Tramway system. From a point at the screens an endless wire rope runs, which conveys the loaded buckets out from one side. When they arrive at the wharf the bucket leaves the rope, and by a carrier runs on a shunt rail. The bucket is then tipped into the pocket, and runs round a radial rail to the other side, where the rope again takes it and returns it to the loading rail at the screens. It works very simply and gives every satisfaction.

DOMINION COAL COMPANY'S COLLIERIES.

RESERVE.

At this colliery nothing very much has been done in the way of improvement. A large haulage engine is on the ground for erection, and the foundations are being put in for two large air compressors, 22 inches by 36 inches by 42 inches, bought from the Rand Drill Company. A new ventilating fan, 20 feet diameter, capable of producing 300,000 cubic feet of air, and an engine to drive it has been purchased and will be built in line with the present ventilating plant. A small water system for the miners is being put in, as the village suffers a great deal from lack of good water during the dry season.

In the underground workings of this mine there is no change, the narrow places and advance work being pushed ahead as fast as possible. A large percentage of the coal from this colliery has been mined and taken from the pillars in the Old Bridgeport district and west of the main slope. In fact they are so successfully extracted that there is scarcely a pillar left.

About twenty-five of the miners' houses from Victoria Mines have been moved to this place and rebuilt on the street leading to Glace Bay. Twenty additional double houses are to be constructed at the same place. A new and roomy wash-house has been built for the miners.

CALEDONIA.

This colliery has almost fully recovered from the effects of the disastrous explosion of last year. All the water that was let into the mine to flood it after the fire has been pumped out, with the exception of a small quantity in the east deep. The old west level has been discontinued and a thirty foot stone barrier built on it to divide it from the new Dominion No. 3 colliery. The old west deeps and levels, and the new west deep, lately started, are being forced along as rapidly as possible. It is expected that the water will be all out of the east deep in the course of a month or two. Two 6 inch diameter boreholes have been put down to the seam near the coal shaft, and the ropes used for endless haulage taken out of the coal shafts and put down these holes. This change gives more room in the coal shafts, and lessens the number of the pulley wheels. An effort is being made to remove as many pulleys as possible where the endless rope system is in use, thus lessening the chances of standing, owing to broken pulleys, and also to use pulleys of a uniform design and size, so as not to be forced to keep such a large stock of duplicates on hand.

On the surface the old engine and sprocket chains used for driving the shaker screens and picking belts have been replaced by a large engine and rope-drive. A steel fan, 14 feet diameter, built by the Dickson Manufacturing Company of Scranton, Pa., is in the course of erection. This fan is made of steel, and incased in a steel housing, fitted with the anti-vibrating shutter, and an ingenious arrangement of doors and shutters for the purpose of reversing the currents of air. It will be driven by a direct complex engine, and is placed in a line with the present fan and engine, making two independent ventilating outfits.

A shaft 11 feet by 6 feet, to be used as a water-hoist, has been put down at the Glace Bay brook, tapping these workings at the lowest point of the west level, a depth of 250 feet. All the drainage of this mine will be conducted to the sump of this shaft, and the water hoisted out by large tanks, carrying 1,300 gallons each. An engine and two multi-tubular boilers have been erected for the work, capable of hoisting two tanks per minute; this will mean the hoisting of 2,600 gallons per minute. The lower tank will fill through a door or large valve in the bottom, whilst the other discharges its contents into the brook. Another compressor, 22 inches by 36 inches by 42 inches, built by the Rand Drill Company, is being put up at this colliery.

DOMINION NO. 1.

At this colliery the advance workings in the mine are also being pushed to gain working places. A place is now being driven from the north deep, a distance of 800 feet, to the borehole which was put down at the International mine. A large Northey pump is to be placed there to pump all the mine water through this borehole to the Harbor seam. From there it will run to the seashore by way of the International water level.

An electric locomotive or haulage motor has been ordered for this colliery, the intention being to haul the coal along the headways and levels by electricity.

A shaft 15 feet by 10 feet is being put down to be used as a man and timber shaft. This takes the hoisting and lowering of men away from the coal shaft entirely, and is a very good thing for all concerned. It will also assist the ventilation materially.

A new fan similar to the one for the Reserve has also been ordered for this place.

Two Babcock and Wilcox boilers were put up during the year equal to 636 horse-power. This gives them over 1,800 boiler horse-power. A new compressor (22 inches by 36 inches by 42 inches), built by the Cooper Manufacturing Company, is in course of construction, as considerable difficulty was felt during the summer for want of sufficient power to drive the coal-getting machines and the pumps.

DOMINION NO. 2.

The sinking of these large shafts is progressing very well. Owing to soft material being met, which breaks away and falls into the shaft, a deck or platform must be built every month to protect the men from this falling material. This is very materially interfering with the sinking of the shafts. The main shaft, 37 feet by 11 feet, has reached the Harbor seam, and has been reduced to 21 feet by 11 feet, and has reached a depth of over 500 feet. The air shaft, 34 feet by 11 feet, has also passed through the Harbor seam, but is being continued the full size to the Phalen seam. A narrow place in the coal of the Harbor seam is being driven a distance of 160 feet for the purpose of collecting the water falling from above said seam, and also to enable the levels to be driven and development work started.

The buntons to the Harbor seam will all be in place ready for the spears by January, 1901, so that by the time the steel bankhead is erected this shaft will be ready to hoist coal.

There are four Babcock & Wilcox boilers of 318 horse-power each. The winding engines, two, are 34 inches by 48 inches; fan, 24.0 inches diameter, and fan engines 20 inches by 42 inches, and the compressor complex compound high steam 31 inches, air 32 inches, low steam 57 inches, air 51 inches, and stroke 60 inches, are all on the ground, and are being erected simultaneously with the sinking and timbering of the shafts.

DOMINION NO. 3.

This is a new slope driven into the Phalen seam, at its outcrop, about two miles from the Caledonia Mines. Three slopes have been driven a distance of 1,000 feet, and levels broken off east and west. A small Murphy fan has been erected for ventilation.

The slope is 14 feet wide, and the seam at this point 8 feet high. The slope is well timbered and graded. The coal from this mine is carried by an endless rope haulage system on the surface, a distance of one mile, to the new bankhead erected this year at Dominion No. 4 colliery. A mine car of a large type, with a capacity of three tons, and a track gauge of 3 feet 6 inches is in use at this colliery. This mine is somewhat unique, as no buildings or machinery are near it; even the miners' tools are sharpened at a distance of one mile from the slope mouth, and are carried to the workings by the endless ropes which lead from the face of the deeps direct to the bankhead at Dominion No. 4.

The output has now reached 600 tons, and is expected to reach 1,600 tons daily during 1901.

DOMINION NO. 4.

This is a new slope driven on the outcrop of the Emery seam, almost three-quarters of a mile from the Caledonia Mine, and near the Sydney and Louisburg Railway leading to Louisburg. Three slopes have been driven and levels broken off east and west.

The seam at this point is 5 feet thick, and has a good appearance. There is considerable water to contend with in the mine. There is built here a large trestle and bankhead, on which is screened and prepared the coal from both the Dominion No. 3 and 4. The approach to the trestle is in the shape of a Y, the coal from each colliery coming on a common platform, passes its respective tipples, worked by compressed air, the cars run by gravitation to a switch-back, where they are again put on the rope and returned on a track immediately underneath the loaded track. By using an upper and lower deck trestle and bankhead a much narrower structure is used, and this has made a great saving in its first cost. The bankhead is fitted with two tipples, one for each mine; two automatic weigh scales, and two sets of stationary and knocking screens and picking belts. The coal from both mines can be loaded separately or together. The screens and belts are driven by a rope drive, the engine being erected on the ground. The total length of the trestle and bankhead is 600 feet, its height is 52 feet. The bankhead is neatly housed over to protect the workmen.

Here also is the haulage engine, fitted with three sets of haulage gear; cylinders (24 inches by 54 inches); two Babcock and Wilcox boilers of 318 horse-power, a fan of 7 feet diameter for forced draft purposes, a large duplex compound compressor, built by Walter Bros., of Wigan, England, cylinders 31 inches by 56 inches by 60 inches, and capable of compressing 6,000 cubic feet of free air per minute, which is sufficient air to run 80 coal-cutting machines of the puncher type now in use. An eight feet fan for ventilating purposes is in course of construction, as are also a number of buildings, such as forges, carpenter shops, stables, etc.

Near this colliery have been built 60 double houses for the miners. These houses are of a somewhat better type than those usually built by coal companies for their workmen. An additional twenty-five double houses are in course of construction.

INTERNATIONAL.

Very few changes have taken place at this colliery. A new pump of the Northey type (10 inches by 20 inches, 8 by 24 stroke) has been added to the pumping plant, and another hole has been bored, through which the discharge water from this pump will be conducted to the surface. A Babcock and Wilcox boiler of 318 horse-power has been placed at the mine. The pillar drawing has been carried on with fairly good success and without accident. Timbering and ventilation, as usual, has been well looked after, and the mine, with the exception of some trouble with water, is in good condition.

NORTH SYDNEY MINING COMPANY.

This mine has worked steadily during the year with about twenty-five men employed. The coal is cut by hand picks, and hauled from the inside of the level by the engine to bank, where it is sold for local purposes during the winter months, and shipped in small vessels through the summer season. The levels have been pushed forward as usual, and rooms broken off. A travelling road has been driven to the rise, out through the crop of the coal, which is a great advantage to the miners, and also assists the ventilation. The mine is well timbered and in fair condition.

THE NOVA SCOTIA STEEL COMPANY, LIMITED.

SUCCESSORS TO GENERAL MINING ASSOCIATION.

During the year there has not been any material addition to the surface plant except the purchase of a Baldwin locomotive. The erection of the coke ovens and washing plant is being pushed forward. The ovens plant consists of 30 Bauer coke ovens with a capacity of 150 tons per day. The washing plant is of the Stein's patent, with a capacity of 500 tons per day.

The colliery as usual has worked steadily during the whole year. The main deeps south have been extended 600 feet. Longwall work on the north side is giving every satisfaction. The extraction of pillars on both sides of the pit is being carried on successfully to the extent of some nine acres for the past year. The pillars around the pit bottom and at the head of the engine planes have been strengthened by strong stone facing and pillars. The ventilation all through this pit is good, and the travelling roads are in good order. On account of the law being changed new manholes have been dug fifteen yards apart on all the main haulage roads on both sides of the pit, timber put in where required, and the pit in general kept in good condition.

NEW CAMPBELLTON, VICTORIA COUNTY.

The principal work that has been done at this colliery during the year, in addition to the getting and shipping of coal, is as follows:—

The old air shaft has been abandoned and the fan has been moved and erected over a new air slope on the south side of the haulage slope. During the winter this air slope has been driven down 500 feet. It is the intention of the company to continue driving it this winter until it reaches the upper level of the lower lift. It can also be used as a travelling road. A water level has been driven 400 feet to connect with the adit from the seashore. There still remains about 200 feet to make this connection, which will be put through shortly, thus doing away with the dams now in use. The levels, north and south, have been kept going during the summer, the north level being at this date 1,200 feet from the slope bottom, and the south level 1,000 feet. I may add here that the management of this colliery pays particular attention to the safety of the workmen. There has been no accident at this mine since the present company took hold.

BROAD COVE MINE, INVERNESS COUNTY.

This mine has been idle since June, 1899. Previous to that it was operated by Mr. Penn Husse, and it has lately been acquired by Messrs. McKenzie and Mann. During the season operations were commenced about a half a mile west of the Husse pits, on the crop of the seven foot seam, and a fine pair of slopes are being driven towards the dip of the seam with the intention of winning the sea areas, which no doubt are valuable. The slopes are nine feet wide and seven feet three inches high, arched with stone down to where the strata are good. These slopes at this date are down about 300 feet each, and are separated by 66 feet of a pillar.

A shaft 73 feet by 7 feet square has also been sunk down near the east slope, and a steam pump placed there by which the water is pumped from the mine. A small engine house has been built, and a small sized engine set up, by which the coal is drawn from the slopes to bank. The coal taken from the bottom of the slopes looks much better than where Mr. Penn Husse had it opened, a half-mile further to the east at the brook. The seam is also about three inches thicker than it is there.

PORT HOOD COAL MINE.

During the past season the old slopes were opened and cleaned out down to the bottom, which was found to be about 600 feet from the surface. The slopes were in good condition owing to the sulphurous water preserving the timber. On the north side of the main slope it was found that some of the old rooms had fallen in, owing, I suppose, to the softening of the roof by long standing in water. In order to make this side safe and useful, a headway was driven up, tapping the faces of the rooms from place to place, also making an airway. A good-sized lodgment has been made at the bottom of the slope, and a pump placed there, driven by steam from the surface, which pumps the water from the mine. The slope is still being pushed forward, and at this date is down about 850 feet. The coal looks well as the slope extends, and the seam is about seven feet thick. An air shaft, 40 feet in depth, has been sunk on the south slope which acts as an upcast, assistd by a steam jet. On the surface an engine and a boiler house, 30 feet by 30 feet, has been built, and a hoisting engine placed therein with a 12 inch cylinder and 20 inch stroke. There are also two good Cameron pumps, one of which is in use; cylinder 16 inch by 18 inch, and water 7 inches; the other a little less in size.; A carpenter and blacksmith shop combined, 25 feet by 60 feet, has been built, and a wharf is under construction 870 feet long and 25 feet in width. From the inside going seaward 795 feet of it have been built by driving piles in the sand. Next summer the company expects to p from this wharf.

MABOU COAL MINE, INVERNESS COUNTY.

No material improvements have been made at this mine since my last report. In the early part of the season a temporary wharf was built, and from it several small cargoes of coal have been shipped. Work went on fairly well until the autumn gales came and carried away the wharf. Since then nothing has been done in the way of mining. The coal bears an excellent character, and people who were dealing with it in Prince Edward Island and elsewhere, offered to rebuild the wharf in order to still continue handling the coal, but Mr. Fraser thought it was rather late in the season to rebuild. The coal that was shipped has been taken from the fourteen feet seam. The mine is in good condition. The intention is to work it on a larger scale next year.

In conclusion I may say that the mines all through Cape Breton are kept in good order, and the requirements of the Mines Regulation Act carried out. The suggestion made by you to Mr. Donkin, General Manager of the Dominion Coal Company, has been complied with, viz.:

That there should be a duplicate of the working plan devoted especially to the ventilation, and that on it there should be marked stoppings, crossings canvas, and wooden doors, etc., and that once a month the Surveyor should be charged with the duty of going over the plan with the overman and manager, and marking it anew as the works advance. By doing this, in case of an accident involving the death of the person principally charged with the ventilation, there would be a plan available showing accurately what stoppings were in the drifts, headways or levels, etc., and how the air was conducted.

Also the instructions concerning the precautions to be taken for inspection of gas have been carried out to the best of my ability.

I have the honor to be, sir,

Your obedient servant,

J. NEVILLE, Deputy Inspector of Mines.

CUBIC FEET OF AIR CIRCULATING THROUGH C. B. PITS YEAR ENDING SEPTEMBER 30th, 1899

Mine.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.
Gowrie and Block House	4000	9000	......	......	9800	......	......	10000	......	[illegible]		[illegible]
Caledonia	80220	89000	69710	67040	88800	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Reserve	17[illegible]210	175000	168000	17[illegible]900	175100	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Dominion, No. 1	85400	85149	78000	79000	84000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
International	75100	70800	65000	[illegible]	70100	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
North Sydney	4278	10000	5000	[illegible]	4000	5000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Sydney	80005	105015	70950	64540	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Campbellton	2200	......	21080	18100	......	......	......	18100	......	[illegible]	[illegible]	[illegible]
Dominion No. 2	......	8000	8000	8000	9000	10000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Mabou	......	......	2000	......	......	......	......	......	......	......	[illegible]	[illegible]
Dominion No. 3	......	......	5000	5040	4900	5200	5000	[illegible]	[illegible]	[illegible]	12000	[illegible]
Dominion No. 4	......	......	......	5748	6000	7000	7800	[illegible]	5000	7000	10000	[illegible]
Port Hood	......	......	......	......	......	5000	5100	......	......	[illegible]	......	[illegible]
Broad Cove	......	......	......	......	......	......	......	......	......	5000	6000	6200

DATE OF OFFICIAL VISITS, INSPECTING MINES IN C. B., YEAR ENDING SEPT. 30TH, 1900.

MINE.	Oct.	Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.
Gowrie and Block House	5	25	......	......	27	......	......	28	......	9	......	6
Caledonia	7	27	18	15	8	9	23	18, 19	23	30	6, 13	20
Reserve	19	17	30	16	16	3,23,24	14	16, 17	13	12	25	21
Dominion No. 1	21	18	16	8	14	10	4, 5, 30	7, 11, 12	12	20	20	3
International	23	28	28	11	21	13	20	15	15	26	31	22
North Sydney	25	10	13	27	2	14	10	29	18	13	1	15
Sydney	26	11	12	20	3	15, 16	7, 9	8, 9	19	28	11	8
Campbellton	28	......	......	29	......	......	......	30	28	10	10	13
Dominion No. 2	......	9	21	23	10	8	27	21	12	23	21	19
Mabou	......	......	7	......	......	......	......	......	......	......	15	25
Dominion No. 3	......	......	26	22	10	8	27	21	6, 8	23	21	4
Dominion No 4	......	......	18	22	10	8	27	21	6, 8	23	21	4
Port Hood	......	......	......	......	......	......	17	......	......	5	......	25
Broad Cove	......	......	......	......	......	......	......	......	......	6	8	26

ACCIDENTS IN CAPE BRETON MINES.

Date.	Mine.	Name.	Age.	Occupation.	Remarks.
1899.					
Nov. 14	Sydney	Angus Fortune	40	Collier	Slightly injured by piece of coal falling on him.
" 24	Dominion No. 1	John McDonald	38	"	Killed by fall of stone, at face of room.
Dec 9	Sydney	Zachria Burchell	45	"	Seriously injured by cage running away in the shaft.
" 9	"	Duncan Edwards	17	Driver	Leg broken " " " "
" 9	"	Robert Dickson	27	Collier	Slightly injured " " " "
" 9	"	Alex. McDonald	29	"	" " " " " "
" 9	"	Neil McKeagen	50	Stableman	" " " " " "
" 9	"	Joseph Edwards	16	Driver	" " " " " "
" 9	"	William Willis	22	"	Killed by fall of roof stone whilst driving.
" 14	Caledonia	Frank McLeod	19	"	Leg broken while driving out of room, horse turned too quickly.
Feb. 1	Dominion No. 1	Dan McLean	39	Miner	Burned on hands and face by powder exploding, while shoving it in to back of hole.
" 5	Caledonia	John McPhail	60	"	Squeezed, caught between pick house and coal box.
" 13	Dominion No. 1	Murdoch McDonald	19	Engine Driver	Killed, fell against engine drum when in motion.
" 16	Reserve	Hector Jameson	34	Collier	Killed by fall of coal whilst drawing pillars.
" 16	"	John Horn	31	"	" " " " "
" 24	Sydney	Frank Ferguson	14	Greaser	Finger and thumb blown off by explosion of detonator, which he picked up in pit.
March 3	Reserve	John Roach	34	Loader	Killed at face of room by fall of coal whilst loading.
" 12	Caledonia	John Nolan	55	Collier	Seriously injured by fall of coal in room, died next day.
" 13	Sydney	Michael Young	35	"	Killed, run over by trip while trying to get on.
April 2	Dominion No. 1	John Morrison	28	"	Leg broken, coal fell on him at face of room.

April	4	Dominion No. 1	Joseph McLellan	16	Driver	Killed by roof stone falling on him whilst driving.
"	7	Sydney	John McCuish	39	Deputy	Killed whilst drawing props out of an old room.
"	12	Caledonia	William Morrison	23	Loader	Ankle broken by a piece of coal falling from face of room.
"	22	Port Hood	Joseph McEachern	20	Collier	Head hurt hoisting tub, fell down shaft whilst sinking.
May	4	Sydney	Alex. Beaton	16	Driver	Injured slightly whilst driving.
"	8	Dominion No. 1	John Campbell	22	Loader	Leg broken by piece of coal falling on him in room.
"	17	Caledonia	Neil Ferguson	30	Collier	Leg broken, piece of coal fell on him whilst driving.
June	1	Dominion No. 1	Edward Patten	28	"	Burned on face and hands by gas at face.
"	8	Caledonia	David McEnzie	22	Loader	Leg broken by a piece of coal falling on him, whilst straying through old works.
"	6	Dominion No. 4	John McDonald	25	Collier	Killed by fall of stone at head of deep.
"	13	" "	George Bishop	50	Sinker	Killed by a piece of stone falling on him down the shaft whilst sinking.
"	18	International	John McKenzie	26	Miner	Small bone broken in leg by piece of coal falling on him in room.
July	12	Reserve	James Jacobs	21	Loader	Killed by fall of coal whilst loading in room.
Aug.	10	Caledonia	Patrick Kearney	35	"	" " " " "
Sept.	8	Dominion No. 1	Duncan McEachern	45	Miner	Slightly hurt by a piece of roof stone falling on him.
Aug.	28	" "	Chas. Hamilton	25	"	Slightly burned by gas at face of headway.
"	28	" "	James Ross	26	"	" " " " "
"	29	" "	Wm. Marshall	29	Bottomer	Killed, caught between cage and roof.
"	15	Sydney	Norman McLean	35	Miner	Ankle-bone broken, block of coal rolled on him from pillars.
Sept.	20	Dominion No. 1	William Corbitt	18	Driver	Hurt, jammed between horse-shaft and trip, horse backed.
"	22	" "	Fred	20	Loader	Foot badly cut, caught between two coal tubs.
"	25	" "	John Andrews	19	Spragger	Seriously injured, run over by coal box at pit bottom.
"	28	Caledonia	John McKinnon	19	Driver	Killed by roof stone falling on him whilst driving

MISCELLANEOUS.

COAL.

In Mr. Neville's report will be found references to coal mining operations in Victoria and Inverness Counties. In Victoria County the Messrs. Burchell have continued successfully their works at the New Campbellton Colliery.

In the County of Inverness there has been a great deal of speculative interest, coupled with the commencement of systematic mining at several points. In the Chimney Corner district large tracts have been secured under lease and license. The presence of coal at Chimney Corner has been known for a long time, and a little mining was carried on a number of years ago. The outcrops of several seams are known about three miles to the westward, and others are reported on the height of land between the shore and the Margaree Valley. It is believed that systematic prospecting will show a large amount of coal.

At Broad Cove work has been commenced by the Inverness and Richmond Collieries and Railway Company of Canada, Limited, to open a colliery a short distance north of McIsaac's Pond. The intention of the company is, it is reported, to win the seaward extension of the principal seams. It is reported that this company will control the areas of the Broad Cove Coal Company and all other territory covering the coal seams in this locality. A railway is now approaching completion from Broad Cove to Port Hastings. This road, it is expected, will be extended to Chimney Corner and Cheticamp, and will prove a most important factor in developing the iron, copper, lead, gold and other minerals of the northern portion of the island, as well as the coal. I may recall to your mind in this connection the favorable report made on the geology of this section of the island a few years ago by Professor Woodworth, of Harvard, for your honorable Government.

At Mabou Mr. R. P. Fraser and others have continued their development work, and anticipate that in addition to the coal available on the land they will have ready access to a large submarine area.

At Port Hood the Port Hood Coal Mining Company has continued the development of its mine with satisfactory results, and expect next season to be ready for a regular output. They control a large territory in this locality, and report that the coal is well received. This section will also be served by the railway, and no doubt the coals of this side of the island will ultimately find a winter outlet at the Strait of Canso.

In the Richmond coal field little work has been done during the past season. It is reported that parties interested in building a railway from Hawkesbury to Louisburg are preparing for a systematic examination of the values of the coal seams known in this territory.

Discoveries of coal have been reported from Harbor Bouche, Antigonish, Merigomish, Kennetcook, and Portapique River, but little work has been done to determine their value.

GOLD.

The returns show that 30,399 ounces were extracted against 27,772 ounces during the year 1899.

I have experienced much difficulty in getting the regular mill and labor returns called for by the Mines Act. There seems to be a growing want of punctuality both in making the returns and in paying the royalty. I have reported this matter to you, and trust that recourse will be had to the means easily available for enforcing a prompt compliance with the law.

The mines have been examined during the year, and have been found in good order. I append report of Mr. Blue on mines visited by him during the past year.

SPRINGHILL, Sept. 30th, 1900.

To E. GILPIN, ESQ.,

Deputy Commissioner and Inspector of Mines:—

DEAR SIR,—

I have the honor to submit to you the following report on the gold mines of Guysboro and Halifax Counties for the fiscal year beginning October 1st, 1899, and ending September 30th, 1900.

GUYSBOROUGH COUNTY.

STORMONT DISTRICT.

Isaacs Harbor. On the 16th July I visited the Richardson Mine. A. B. Cox, Esq., manager. There were 96 men employed.

There are two shafts in operation working a block of 100 areas. The east or main shaft is sunk on the apex of anticlinal. It dips at an angle of 35 degrees, and is 530 feet deep, with workings extended north 750 feet, and south 270 feet.

The belt is 15 feet thick, and until lately all was put through the mill.

The management, profiting by past experience, are now leaving good substantial shaft pillars, alternating on each side. Two of the pillars which I examined were 40 feet by 60 feet and 50 feet by 70 feet. There was some time ago a heavy cave-in of rise workings, and it must have been at considerable cost that the shafts now in operation were saved.

Large quantities of timber and several chocks filled with stone were put in on both sides of the shaft.

Though this cave-in was inconvenient, expensive, and brought in jeopardy the workings of a paying mine, it was the best thing that could have happened to the management. It brought plainly before them the necessity of leaving good pillars, and by the fall they were relieved of the enormous swing weight or pressure that would certainly have been carried upon the lower works.

In addition to shaft pillars there has been several feet of hard rock left on the roof which hitherto was mined and milled. Above this "hard rock" the roof was full of cutters or "lypes," which began to crumble off soon after exposure to the air. The improvement is seen in a clean, smooth, hard roof, and much shorter timber, as well as in a large increase in the number of tons crushed and the better returns

NORTH SHAFT.

This shaft is situated on the same belt, and on the north arm of the fold. The shaft is 280 feet deep, at an angle of 70 degrees, and is connected with the main shaft by a cut through reported in 1899.

An effort is now being made to secure another connection lower down. Ingersoll and Rand drills are in use in both shafts, and are driven by steam.

The shafts are well timbered, laddered and ventilated. The workings are also in good condition. The mill has forty stamps with Blake rock breaker. A Wilfley concentrator has been added during the year, making two in all, and two more are to be erected at once. On account of the change in quality of material mined and sent to mill, about 2,000 tons can be crushed per month, yielding 45 tons or about 2 1-2 per cent. of concentrates, worth $17 per ton, after paying all expenses.

A Rand air compressor, capable of handling eight drills, is now set up at the mill about 1,900 feet from the shafts. It is intended to supersede steam power in the mine. Excavations are being made preparatory to installing a new return tubular boiler of 100 horsepower. Twenty more stamps are to be added to the mill.

S. SWEET & CO.'S MINE.

F. A. Sweet, Esq., manager. He has fourteen men employed, day and night shift. This mine is sunk on what is known as No. 9 Mulgrave, and was in operation some thirty years ago. The present owners have four areas, and in January, 1900, they began to unwater and retimber the mine, which was 140 feet deep. This shaft was sunk a further distance of 45 feet, and stopes have been driven east 50 feet. The belt is 5 feet thick, and the lead runs from 10 to 20 inches in width. Tests that have lately been made show from 11 to 12 dwts. per ton. Near the shaft the lead is thin, but as they advance to the eastward it thickens very fast; also; shows an increase of gold.

A boiler and hoist have been erected during the early part of the year. The mine water is handled with tubs.

HURRICANE POINT GOLD MINING COMPANY.

W. F. Fancy, Esq., manager. There are twenty-six men employed. The property is situated on a point of land extending some 2,000 feet out, and at right angles to Isaacs Harbor (east side), in the township of Goldboro.

There are 69 areas in the block, 50 of which are under water. At a depth of 70 feet in the west shaft a heavy fold occurs, dipping west at an angle of 37 degrees. For 100 feet above this fold the workings were extended westerly a distance of 475 feet, along a strike of pay rock, and under the harbor. During my visit the lower workings of this mine were full of water, as they were out of the strike of the gold, and the lead petered out. They are now mining along the roof, or that part of the mine which had been left for protection from the sea, with excellent results, and expected to wind up this mine very shortly.

The same company are now opening on another lead 500 feet south of the old works. The shaft has been sunk 20 feet on a belt 5 feet wide, and a lead of 12 inches, dipping north at an angle of 50 degrees. This lead is well mineralized, and the owners confidently expect that a paying mine will be the result of present operations. The belt is chiefly slate, and the lead is centrally placed in it.

Economy Mine. This mine is situated one mile east of the Post-office at Goldboro, Isaacs Harbor, and has been idle for some time past.

FOREST HILL.

Modstock Gold Mining Company, G. F. McNaughton, manager The mining operations carried on in this district are practically under the Modstock Company. There are three shafts in operation, two of which are on the school-house lead.

The McConnell areas on the same lead to the west of the Modstock Mines were acquired during the year, and are now operated from their western shaft. The workings in various pits are as follows·

School-house shaft. There are seventeen men employed. Stoping has been extended a further distance of 300 feet east, and 200 feet west, making a total distance driven of 400 and 300 feet respectively. A combination of over and underhand stoping is practised. The belt is 4 feet thick, and the lead is 4 to 6 inches thick. A modern mill of 10 stamps, and two Wilfley tables have been in continuous operation. Ten additional stamps are now being installed, which of course will call for an increase of boiler and engine power.

At the south shaft there are seventeen men employed. This shaft was sunk 125 feet since my last visit, and has been stoped east 200 feet, west 150 feet, by underhand work. The belt is 4 feet, and lead 8 inches thick; probably 25 per cent. is milled. Air drills are in use supplied by a duplex compressor 10 inches by 14 inches, and capable of running four of those machines underground. A hoisting donkey, engine house, also a deckhead, are the improvements at this mine during the year.

Office shaft. Here there are 10 men employed. This shaft was also deepened about 80 feet, or to a total distance of 125 feet. Stoping has been extended east 90 feet, west 100 feet, by underhand method. The belt is 4 feet, and lead 6 inches thick, and about 10 inches of material is milled. Air drills are in use in the mine, and are supplied with power from the compressor at south shaft.

COUNTRY HARBOR GOLD MINES.

Alex. Cameron, superintendent. These mines are five miles south from Country Harbor Cross Roads, Guysborough County, and one-third mile east up Johnston's brook. Those mines have laid idle since 1895, except some work done on the Hopewell property at intervals. The present owners are St. John, N.B., capitalists, who have lately acquired the latter mine. On the old Country Harbor Company's shaft they have placed a combination boiler and engine of 40 horse-power, two Cornish pumps, and a friction hoist. In fact everything was ready to begin active operations.

This mine is at present full of water and was flooded from the Hopewell Mine, which caved in from surface for a considerable distance. During the operations in latter mine the barrier, that should have been left intact, had been pierced. The cave-in in the upper mine allowed the water to also fill the lower mine.

The present company has built a dam some distance above the underground workings of the Hopewell Mine, and have run a flume, 500 feet long, to take the water on an easterly course down past all the works. It then allows the water to enter the brook again. By using this flume it will be possible to unwater the old works.

Considerable prospecting has been done here for the past two years, with some success. A new lead has been opened on the top of Johnston's mountain, with a belt 3 feet thick, containing 4 leads, 1 inch, 5 inches, 3 inches and 3 inches thick, the remainder being slate. Lead runs high in gold, and work on it is to be started at once. Six hundred feet south of Country Harbor Mines a tunnel has been driven across the metals some 300 feet, exposing a number of leads.

This opening is probably high, as the strike of the gold in this direction from the old workings was about 33 degrees from the horizontal and dipping south. A peculiar feature of this district is that instead of leads running east and west as most of them do throughout the county, in Country Harbor they all run north and south.

THE OPHIR GOLD MINING COMPANY.

J. C. McDonald, Esq., manager. This mine employing 25 men is on the west side of Country Harbor. The shaft is 90 feet deep, and a tunnel has been driven south 16 feet, where a break was encountered and operations discontinued. The belt is 12 feet thick, composed of layers of quartz and slate. About 3 feet 6 inches of lead was worked and 50 per cent. milled. A five stamp mill was built a distance from the shaft. Hoisting and pumping was done by

COCHRAN HILL MINE.

After remodelling the mill as reported last year, and adding a 40 horse-power boiler for hoisting and pumping purposes, about 1,500 tons of ore were mined and crushed. The work closed down in February, 1900, and continued so up to time of my visit in July.

CROW'S NEST GOLD MINING COMPANY.

W. H. Weston, manager. There are 22 men employed on day and night shift. The work carried on during the past year was chiefly from No. 1 level, and was extended 220 feet, under and back stoping were practiced. The lead is from 8 to 26 feet wide. They are now sinking a shaft 9 feet by 12 feet on the east end of the open cast. It has reached a distance of 100 feet, and is to be sunk a total of 225 feet. The object of sinking is to locate a strike of pay rock, supposed to be dipping west at an angle of 22 degrees. Adit, or No. 3 level, is to be extended 500 feet to connect with said shaft. It will probably tap the strike of gold. This level is now driven about 600 feet.

A cross tunnel of 60 feet was driven south to the Stake lead, and considerable tunnelling was done. An upraise was also driven a short distance. This work has since been abandoned. A tunnel, 100 feet east of the Stake lead tunnel, was driven to the Rose lead, a distance of 32 feet, and an upraise carried 57 feet. A place is now driving east from upraise of Rose lead to an open cast where a test lot of 12 tons had been taken out in April, 1899, showing well in gold. A Wilfley concentrator has been erected at the mill, saving from 1 to 8 per cent. of concentrates, which from actual tests have produced from 18 to 0 dollars per ton. A spiral sand pump, made by Themer & LeBlanc, Rutland, Vermont, U.S.A., has been installed lately. The power, one-quarter horse-power, will raise 50 gallons per minute, containing 60 per cent. sand, to a height of 12 feet. The object is to raise the tailings from sluice, and to deliver them to the concentrators

WINE HARBOR.

Plough Lead Mine. Martin McGrath, Esq., manager. There are 28 men employed. The shaft has reached a depth of 177 feet, having been extended 77 feet during the year. Stoping has been carried on 90 feet east and 40 feet west. The belt now mined is 20 feet wide, and extends clear across the workings. Seventy-five per cent. of this belt is milled. There is about 100 feet in depth of this large body of ore now proved, yielding 8 dwts. per ton. The strike of the gold dips slightly eastward.

In sinking the shaft the old fault was encountered, on which this lead was lost for years, throwing the sinking into what is known as the south lead, showing well in gold where tapped. On this account a new shaft is to be sunk 175 feet east of site of present one, and near the mill, but further north, to cut the already mentioned body of ore, which is thought to come in from this direction and increase in size as it extends eastward. An engine of 40 horse-power for hoisting and pumping purposes (Robb & Co., Amherst, N.S., manufacturers), also a Matheson boiler 100 horse-power, have been erected at the mine.

The hoist was changed from single to double gear. Increased engine power is to be added to the equipment, and probably capacity of the mill will be augmented, as an increased output could easily be obtained. Everything about this mine is in good condition.

THE GUYSBOROUGH GOLD MINING COMPANY.

Eureka Mine, one-half mile east from Wine Harbor. The property has four shafts, three on the Eureka and one on the Charlotte lead. These shafts vary in depth from 70 to 180 feet. Stoping was extended in a westerly direction, and a crosscut driven 200 feet north to a small belt containing two leads, 2 and 3 inches thick. There was a good deal of work done between the shafts. Air drills were in use, supplied with power by a compressor capable of handling two machines. A 10 stamp modern mill with Blake rock-breaker is running in fair order.

In March, 1900, work was stopped on this property, and it continued idle until June, when it was taken over by the owners of the Plough Lead Mine. They intend to follow a strike of gold pierced in the east shaft at 70 feet, in the main shaft at 140 feet, and in the west shaft at 180 feet, dipping westerly. At the time of my visit they had steam and hand drills in operation. Ladderways, timber and ventilation are fairly good.

MIDDLE LEAD MINE.

McNaughton's shaft. R. S. Irwin, manager. There are twenty men employed. This mine is on the east end of the workings from Mitchell's shaft. It was sunk 150 feet about ten years ago, and was reopened in October, 1899, by L. M. Pratt & Co. The shaft was sunk a further distance of 90 feet, tapping the extreme end of Mitchell's workings.

All the old workings in this vicinity had to be unwatered, and two steam pumps of Northey manufacture have been used. They are placed in the main shaft. Stoping extends 20 feet east and 50 feet west. There is a strike of gold dipping eastward at an angle of 20 degrees, and the shaft will be continued down to the level of the strike. Some rock mined in July showed very well.

The improvements on bank are, a new deckhead engine house and a smith's shop. The hoist is double. A geared engine of 40 horse-power and a modern Five stamp mill have been built about a quarter of a mile from the mine, to which there is a good grade for an inclined plane. A large boarding house has been built by the company near the mill. The lead of this mine is whin, 20 feet wide, and about 40 per cent. of it is milled.

GOLDENVILLE.

Bluenose Gold Mine Company. A. G. McNaughton, manager. There are about 60 men employed, on day and night shift. There are two shafts in operation on the Springfield lead, the east and the west. The latter, or main shaft, has been retimbered and remodelled and is now 400 feet deep, and has two compartments, one being a good ladder way 4 feet 6 inches square. At a depth of 300 feet, level stoping has advanced 150 feet, or a total distance of 550 feet.

Work has also been carried on in the new sinking, east 200 feet and west 300 feet. Good-sized pillars are left to protect the main shafts—one on east side of east shaft measured 40 feet by 60 feet, another between shafts is 40 feet by 80 feet, and there is one 70 feet by 200 feet on west side of main shaft. The practice of leaving pillars in gold mines is most commendable, and is the feature to be noticed in the mining practice of this year. Pockets, or ore chutes, are placed at the different landings, so that loading and hoisting can be quickly done.

The belt is whin, nearly vertical, with small stringers of quartz. There are two leads, from 5 inches to 7 inches thick on the hanging and footwalls. Underhand, and, at times, backstoping, are practiced. The former is chiefly the mode of working. The mill has 20 stamps, and 10 more are now being installed. The average crushing is about 60 tons per day. When the proposed 30 stamps are in operation, it is expected that 30 tons will be crushed each day.

A rock-breaker, 10 inches by 15 inches, capable of reducing the above number of tons, inch cubes, is to be placed at the mill. A hoisting engine with tandem drums will be installed shortly. A Norwalk compressor to run 10 air drills, at 100 lbs. pressure, has been erected during the year. I found everything about this mine in good condition. In addition to the improvements at the mill, two Wilfley concentrators are to be introduced.

ROYAL OAK GOLD MINING COMPANY.

W. J. McIntosh, superintendent. He has 35 men employed. This property, when worked twenty-four years ago, was known as the Gladstone Mine, containing 150 areas. When cleaned out the shaft proved to be 200 feet deep, dipping north at an angle of 43 degrees.

The present owners continued the sinking a further distance of 200 feet, and turned off tunnels east and west, 70 and 60 feet respectively. On the west side there are two tunnels, one south 22 feet, and one north 24 feet, to catch the Gladstone lead on the north side, and the McKenzie belt on the south side. These improvements were accomplished after the mine was unwatered, retimbered and reladdered. The belt is 5 feet thick, and gives about 24 inches of milling material.

The hoisting engine is 50 horse-power, the pumping engine 25 horse-power. A 10 stamp mill is in course of construction, 600 feet west of the main shaft. It is to be of modern pattern, with Dodge or rock-breaker, 7 inches by 9 inches, self-feeding, and two Wilfley tables will also be put in.

All mining is done by machinery, Rand steam drills being used. Room will be made at the mill for a compressor to run eight drills in the mine.

UNION DEVELOPMENT COMPANY.

Mr. N. Nopping, manager. This is a combination of the Stuart Hardman and the New Glasgow properties. During the past year no work of any note was done underground, but an additional 10 stamps were put in the New Glasgow mill. The old Wellington shaft was unwatered for 200 feet and refitted for some distance. Total depth of this shaft is 900 feet. A large store, 45 feet by 55 feet, was built in the village. The chief work done by this company was the commencement of a large two compartment shaft near the western end of the Palmerston property, on the dome of the anticlinal. It reached a depth of 40 feet. A 100 horse-power boiler and 50 horse-power engine were set up, though all work carried on by means of whims. Arrangements were completed to introduce Rand air drills at above depth. Excavations for a 100 stamp mill of the California type were finished. It will have two batteries of 50 stamps, back to back, with ore bins and self-feeders, Wilfley tables. Litigation and work was suspended early in February, 1900.

HALIFAX COUNTY.

Ecum Secum, Westminster Gold Mining Co., Mr. C. H. Drillio, manager. There are 14 men employed, on day and night shift. The incline shaft has been sunk 65 feet, making a total of 180 feet, at an angle of 65 degrees. After reaching this depth the lead assumed a vertical position for 25 feet, and then turned horizontal for a short distance, and then began to dip on the original course at 70 degrees. On this fold a vertical shaft, of three compartments each, 4 1-2 feet was sunk a distance of 120 feet, cutting several leads showing good rock. From this point a cross tunnel, 4 1-2 feet by 7 feet, was driven south 102 feet, cutting what is known as the Galena lead, from 8 to 10 inches thick, with 24 inches of milling material and 5 feet belt.

Drifts were driven on this lead east 105 feet, and west 108 feet, both showing well in gold. A crosscut was also driven north 187 feet, cutting a 20 foot belt at 65 feet, all of which can, I think, be milled. An actual test lot from this belt returned, I was informed, from 8 to 10 dollars per ton.

At 160 feet the dome of another anticlinal was cut, showing north and south dips. This lead is corrugated, or barrel-shaped, is 10 inches thick, and also contains small stringers of quartz and slate, furnishing 23 inches of milling material. The east drift in the main lead has advanced 110 feet. The belt is 5 feet thick, and the lead averaging 14 to 18 inches. Three feet of belt is milled.

The ladders and the timbering are good. Steam Rand drills are
in use. about 700 tons of ore on the surface, but no milling
done. A 20 stamp mill, rock-breaker and feeder,
drills in mine, are to be erected at once im-

Moose Head Mine, Mr. Edward Brownell, manager. This mine is about three miles south of Moser's River, and two miles east of Harrigan Cove. Early in July, 1900, the mill and the entire surface plant were destroyed by fire. I was informed that crosscuts were driven north and south 100 feet, and that some good leads were cut.

The shaft, which is 150 feet deep, lies at an angle of 45 degrees. The belt, 4 feet thick, and the lead, 20 inches thick, dipping south. Several small crushings had been made before the fire. It is probable that no attempt will be made to rebuild the mill, etc., at present.

Harrigan Cove Mine, Mr. John O'Leary, manager. There are 40 men employed. This mine is about one mile north of Harrigan Cove. There are three shafts sunk on the Bishop lead, the main or centre shaft is 100 feet deep, dipping at an angle of 45 degrees. The east and west shafts are 60 and 75 feet respectively. Hoisting is being done in the main and east shafts, and the west shaft is to be fitted up at once for an increased output.

The distance from main to east shaft is 120 feet, and about 50 feet of this ground is wored out. The lead is 8 inches, and the belt is 3 feet thick, half of which is milled. A friction hoist of 10 horse-power, and a boiler of 25 horse-power, have been erected during the year. A Cornish pump is doing duty in the main shaft, to which all water is conducted.

This property had been taken over by Mr. O'Leary's company early in February, 1900, and for three months previously the mine had been worked on tribute. The company contemplate building a mill of 10 stamps, with rock-breaker and self-feeder near the main shaft, in the early autumn. Negotiations are now going on for the purchase of the mill at Economy Mine, Isaacs Harbor.

A commodious boarding house, 28 feet by 30 feet, has been built near the mine, also a storehouse, barn and smith's shop. Some development work is going on further east, and a shaft is being sunk on an angular 2 feet wide. The output of ore is from 200 to 260 tons per month, and it is crushed at the McManns mill, half a mile south of the mine.

A short distance west of Harrigan Cove Mine Mr. Kent Archibald is doing some development work. He is sinking two shafts, one on the Bishop lead and another further south on the big lead. Ten men are employed.

The shaft on the Bishop lead is down 30 feet and shows good rock. Work is stopped at present on account of the large amount of water that had to be handled with tubs. His intention is to build a hoisting and pumping plant at once. The big lead shaft has been sunk 20 feet, dipping south at an angle 45 degrees. The belt is 3 1-2 feet wide, with one lead 10 inches thick.

Mr. McMann is taking out a test lot of 25 tons from the north lead. He has eight men employed. The belt is 5 feet thick and the lead 12 inches thick. On the east side of the shaft, which is 60 feet deep, a lead appears on both hanging and footwalls.

There is a friction hoist, power being supplied from the mill, which is close by. The mine is freed of water by tubs. For a prospect everything is in good order.

SALMON RIVER.

Dufferin Mine, T. W. Getchell, manager. There are 100 men employed. The vertical shaft has been sunk an additional 100 feet during the year, and is well timbered. While engaged sinking the shaft, and when near the bottom, a lead of 4 inches, in a belt 4 feet thick, dipping south, hitherto unknown, was cut. To save shaft pillars cross tunnels were driven on each side, and the lead worked east and west of the shaft 125 feet and 70 feet respectively.

A Northey steam pump, capable of raising 150 gallons of water per minute, against a head of 300 feet, has been placed on the 400-foot level, and forces water to the 300 feet level, from which point a Northey duplex discharges it to the surface. The winze reported last year was driven in No. 1 lead. Drifts were extended from it east and west 50 and 100 feet, and some ground was worked out on both sides. From the 400 feet shaft bottom a crosscut, 100 feet long, was driven to No. 1 lead, and cut the winze drifts.

At the 300 feet levels the drifts have been extended on Nos. 1 and 2. No. 1 east is driven a total distance of 370 feet, and No. 2 east has reached 347 feet. This ground has been stoped out to the dome, the lead averaging 18 inches of milling material. No. 1 west has been extended a total distance of 26 feet, and no openings made, while No. 2 west has been driven 282 feet. Nos. 1 and 2 leads come together at a distance of 225 feet from the shaft, giving 8 feet of milling ore. The mine is in very good condition, well ventilated and timbered. The mill has 60 stamps and 25 frue vanners. The 30 stamps and 10 vanners installed last year, are the only ones in operation at present. On the 16th June, 1900, this property was stated to have been acquired by the J. Gordon Miller, Mining and Milling Company, with head offices at mines. From that time until this date those mines have remained practically idle.

Lake Eagle Mine. This mine is one mile north-east from the Dufferin, and is owned by the same company, T. W. Getchell, manager. The vertical shaft has been sunk a total distance of 185 feet. It is fitted with a double Ledgerwood hoist and cage, using a steel wire rope, one inch in diameter. There is also a good ladderway in the second compartment.

At the 100 feet level a crosscut driven south (135 feet) cut the No. 2 vein, which was drifted on for 22 feet. At the 172 feet station a crosscut has been driven 17 feet to the No. 1 lead, with drifting east and west, 37 and 22 feet. An upraise of 30 feet from crosscut connects with the level above.

A Matheson boiler of 40 horse-power supplied steam for the hoist, and the Northey pump placed in the shaft. This pump can deliver 100 gallons per minute against a 200 feet head. Steam Rand drills have been in use since the sinking of the vertical shaft began. This mine was also idle during my visit.

KILLAG.

The Sheet Harbor Gold Mining Company, Little Klondike Mine. This mine is now operated on tribute by Messrs. J. A. McPhee and A. J. Cox, employing 18 men. The main shaft is vertical for 30 feet, after which it turns to a dip of 45 degrees for 110 feet. Drifts are driven east and west 80 feet, and considerable ground has been worked out. The greater part of work now being performed is west on high ground. They are extending drifts west about 50 feet from level of main drifts, expecting to cut a strike of gold that is supposed to exist in this direction.

The belt is 4 feet thick, and the lead is 4 inches thick. It lies on the hanging wall. The east shaft connects with an upraise driven last year for air. The ventilation is good. Steam Rand drills are used for mining and give good results. Hoisting is done by friction gear, 15 horse-power. The water, which is light, is taken out by a Cornish pump. Steam is supplied by a return tubular boiler of 50 horse-power. The output is about 40 tons of crushing material monthly, and is crushed at a mill a short distance east.

This property, containing 90 areas, was bonded to J. B. Neilly, Esq., and ceased work in August, 1899. Several months later it was re-started by present operators.

TANGIER.

The Worcester Tangier Gold Mining Company took over these mines and operated them for a few months. In the Nos. 1 and 3 shafts a small amount of mining was carried on. No. 4 shaft was sunk 160 feet, retimbered and remodelled. One hundred feet west of No. 3 shaft a new or main shaft, 4 feet by 12 feet, was started in September, 1899, on the Nigger lead, dipping south at an angle of 60 degrees. It had reached a depth of 90 feet in November, when work ceased, and all those pits have been idle since. I am told that the company has been reorganized, and a new start is to be made on a more economical scale. The Tangier Gold Mining Company of Boston will in future endeavor to operate the district. Five hundred feet east of No. 1 shaft a new lead was discovered early in June, 1900, and about twelve tons of ore yielded 24 ounces of gold from an opening 10 feet by 40 feet along the crop. When work is again resumed this lead will be opened up. The belt is 4 feet thick, and the lead 9 inches thick, yielding about 6 inches of milling material. This find is a short distance from the mill, and can readily be worked with ropes leading therefrom.

MOOSELAND.

The Arlington Gold Mining Company, J. A. Reynolds, Esq., manager. There are about 16 men employed. This mine is 14 miles north of Tangier, on the Mooseland road. A 10 stamp mill is now being erected, 5 stamps of which will be installed as soon as possible.

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] feet from the shaft bottom [illegible] feet by 18 feet, and it is to be connected with the main shaft every 100 feet by drifts and cross [illegible] are particularly [illegible] In the winze the vein is 12 feet wide, 30 feet [illegible] There are 7 feet of vein in the stopes, half [illegible]

The [illegible] engine, [illegible] drums, also a [illegible] drill air compressor, Ingersoll, has been removed from the old to the new vertical shaft. For sinking a [illegible] is run on pulleys from shaft to winze bottom, so arranged that it can be quickly connected to main hoisting rope. Some improvements, rails, etc., have been added to the ladderways, and they are in good condition.

Truro Mine. Messrs. Sinclair & Logan have three men taking out a test lot of 30 tons from the west shaft. Those parties began in July to unwater the mine. The shaft is 5 feet by 11 feet, and 60 feet deep. When bottom was reached it was found that the former operators had left the mine in an unfavorable state. There was twelve feet of stuff mud in the shaft, and the west side workings were full. Those places had been poorly timbered, and mined out rather close to surface.

Elk Mine. I am told that there was some work done in this pit during several months of the year, but at the time of my visit everything was at a standstill and the workings full of water.

There is a good deal of prospecting going on in this district.

MOOSE RIVER.

The Touquoy Gold Mining Company, D. Patriquin, manager. There are 26 men employed. The principal work done by the company is on the Little North lead shaft. It is sunk 22 feet, at an angle of 45 degrees for 100 feet, and at an angle of 75 degrees for the remaining distance, the dip being southerly. In October, 1899, work was started to unwater and refit this mine. Timbering and ladders were finished for 170 feet, and the shaft sunk 50 feet deeper. The belt on the east side is 5 feet thick, on the west side it is 4 feet thick. The lead averages 12 inches in thickness, and is the only part crushed. Ground was worked out for a distance of 40 feet east and 140 feet west. While sinking, and also in the east workings, a break was struck, throwing the metals out for the full width of the belt.

A friction hoist, 30 horse-power, and a boiler 60 horse-power, have been set up. The mine water is taken out by a Cornish pump. A deckhead and engine house, also a smith's shop, has been built. I found the mine and its workings in good condition.

The mill has 15 stamps and is driven by water power, which also drives a 4 drill air compressor. About 600 feet south of the main works this company is sinking a shaft 5 feet by 12 feet. It was only 10 feet in the rock at the time of my visit. It is expected to cut a strike of gold dipping west. Air drills are in continuous use in those works.

The Colonial Gold Mining Company, Robert Kaulback, superintendent. It has six men employed sinking a shaft on a new lead a short distance away from the Touquoy areas.

Montreal Gold Mining Company, Mr. A. McGregor, superintendent. There are six men employed in the slate quarry, or open cast works, which are 30 feet deep. This slate has stringers of quartz running through it, and yields from 60c. to $2 per ton. Enough crushing material is taken out during the summer and autumn to keep the mill in operation during the winter. The mill has 10 stamps, is driven by water power, and is distant half a mile from the mine. The ore is hauled by teams.

EAST CHEZZETCOOK.

Oxford Mining Company, G. J. Partington, manager. He has 37 men employed. The Oxford gold mine is situated in the Lake Catcha gold district, Halifax County. It is five miles from Musquodoboit Harbor post and telephone offices.

Operations were commenced in 1882, since which time about 20,000 tons of ore have been crushed, producing over $350,000. Almost the entire product was taken from eight of the 63 areas forming the property, and from six of the numerous leads discovered. For some time operations have been confined to prospecting the western portion of the property. Drift of exceptionally rich leads has been discovered and five leads located that give every indication of proving profitable on development. They are at present developing two leads contained in one belt, known as the Twin lead. It has a main shaft down 65 feet, and the lead opened and worked 130 feet east and west. The results obtained so far have been profitable, and the indications are so favorable that they have decided to extend the development. The lead is from 1 inch to 2 feet 11 inches.

In April another lead, 80 feet north of the Twin lead, was opened. The main shaft is down 70 feet, and drifting has been carried east and west about 210 feet. Stoping has been going on steadily. This lead has also been tapped 300 feet west of present workings. Other openings have been made on the east side. The work has not gone far enough to show anything definite. This lead averages 3 inches in thickness. Two rolls appear in those belts with an easterly dip of 18 degrees. The pay streak also follows in the same direction.

The intention is to work two shafts, one on each lead. For this purpose a double Jenck's hoist of 25 horse-power has been installed, together with a 40 horse-power boiler, return tubular, and a duplicate of above machinery will be erected immediately at the other shaft. All water is handled by pumps of Cornish type. The plant consists of a 10 stamp mill, fitted with rock-breaker and automatic feeder Three boilers and two engines, one Rand duplex air compressor, with complete equipment, pumps, and everything necessary to a fully equipped mill.

Hanright Mine, Mr. Mark Anthony, manager, employing 18 men. This mine is half a mile west of the Oxford property, and contains 130 areas. Considerable development has been carried on during the past year, and several shafts have been sunk to various depths on as many different leads, viz., Sheba lead, shaft 90 feet deep and stoped out 40 feet eastward, belt 4 feet thick, lead 5 inches thick, the lead being the only part milled. North shaft, 90 feet deep, and ground worked out 60 feet east and 40 feet west. The belt is 3 feet thick and the lead 2 inches thick. About 20 inches of this belt is crushed. South shaft is 60 feet deep on the south lead, which contains a 3 feet belt, and a lead 3 inches thick. One-quarter of this belt is crushed. No ground has been worked, but an angular of 12 inches runs across which they intend to operate.

During my visit all work was confined to development. A 10 stamp mill was in course of construction, also a compound engine of 25 horse-power and friction hoists. Four hundred feet east some development is going on, and a number of leads showing well have been exposed. As in Country Harbor, they run north and south instead of east and west, as most of them do. The intention is to sink two shafts on the main leads.

John H. Anderson's Mine. Four men were employed sinking a shaft on the split lead, and a number of men are at work further west tribute.

LAWRENCETOWN DISTRICT.

Mineville, Shanghai Mine. J. H. Townsend, Esq., owner and manager, has six men employed. There are three shafts, two of which are in operation. The principal work during the year was on the Wadlow lead. The western shaft in this lead is 50 feet deep, and eastern or new shaft is 80 feet deep. There are 70 feet between them, and ground equal to 200 tons of ore worked out, which on milling yielded over 1 oz. to the ton.

The east shaft was sunk during the year to cut the eastern prolongation of the pay rock, which has an angle of 40 degrees eastward. The tunnel driven in the side of the gulch has been extended a distance of 30 feet into the Wadlow lead for drainage purposes, and also to expose a large body of ore about 10 feet in width, lying immediately south of the Wadlow lead. As there were no pumps in these shafts, the early season's work was much hindered by a large inflow of water during the rainy season. The mill, of 3 stamps, water power, was not working on account of the scarcity of water at the time I visited the mine.

The Evangeline Gold Mining Company, Limited, Cow Bay. Mr. J. W. Horn, manager. There are 12 men employed at this mine. There are two shafts on this property, viz., the north and the south. The former is 80 feet deep, and the latter has reached a depth of 140 feet, having been sunk 25 feet during the past year. Stoping was carried on a short distance on both sides in both shafts. The lead averages 12 inches. The belt, owing to this being a cross lead, is irregular, running from 3 to 4 feet in width. Forty-three feet north of the north shaft the lead suddenly changes to a westerly course without any change in size. Both shafts were partly remodelled and laddered. A Cameron pump, to raise 100 gallons water against a head of 250 feet, has been placed in the south shaft. A double hoist (Cooper's), 25 horse-power, and a boiler of 40 horse-power, are the chief improvements. The mill, a 5 stamp water power, has an automatic feeder, and crushes 7 ton a day. It is about half a mile from the mine.

Montague. The Golden Group Mining Company has tributes at work in several places on the Skerry lead.

Alex. Cameron, et al, are tributing on the Annand lead. They have opened a shaft 35 feet deep, retimbered and laddered it. The belt is 2 feet 9 inches wide, and the lead is 20 inches thick. Sinking and working out ground on both sides has been carried on for some time. A friction hoist with a geared attachment does the pumping.

John McQuarrie and others are doing some development work further south. Several other parties are prospecting in this vicinity.

OLDHAM.

There is no mining of any note going on here at present. Messrs. Edward Whidden & Company opened the Stirling lead in November, 1899, employing six men. Two shafts, the north and south, were sunk 30 years ago 256 feet and 300 feet respectively, at an angle of 35 degrees. The mine was unwatered and retimbered, in fact remodelled, and the north shaft was sunk an additional 70 feet, and some ground worked out south for 60 feet. The lead averages 6 inches. It is perfectly smooth on the top, while the bottom is corrugated or a barrel-shape. Mr. Whidden deserves credit for reopening a mine that has remained idle so long. I am told the results are satisfactory, and there is no doubt those enterprising operators will be rewarded. The plant consists of a double Jencks hoist, 35 horse-power, and a boiler of 50 horse-power. The mine water is handled by a steam pump placed at the bottom of the south shaft.

T. N. Donaldson, et al, are tributing on the Doran barrel lead. Operations began in June, 1900, to unwater and refit the shaft, which was found to be 130 feet deep. It was extended a further distance of 20 feet, and considerable ground worked out on each side. The belt is 3 feet thick, and the lead averages 6 inches, of a perfect barrel shape. All hoisting is done by whims and the water taken out by tubs.

There are several other parties tributing and prospecting in the district, but the work has not gone far enough to enable any opinion to be formed of the prospect.

GAY'S RIVER.

Nova Scotia Gold Mining Company's Mine. Mr. Normen Logan, manager. There are 65 men employed. This mine is situated about seven miles south-east of Shubenacadie Station, is on the old Halifax road, and is owned and operated by the Waverly Company. They opened on an old shaft 450 feet deep, dipping at an angle of 10 degrees. The workings had been badly gutted, and it was with considerable difficulty, by pack building and putting in large quantities of timber, that the shaft was opened down to the bottom. At this point a vertical shaft intersects it, sunk and operated years ago by the Parker Douglas Company. It is to be refitted.

The milling material is found as a bed on top of the slates, and averages from 2 to 10 feet in thickness. It is heavily charged with boulders, and resembles the material found on a beach, and dips west. Seven hundred feet west a new vertical shaft, 11 feet by 4 feet by 6 inches is now being sunk. It has reached a depth of 80 feet, and is well timbered and laddered. The intention is to concentrate all operations at this point. The mine water is taken out with a Cameron pump, 3 inch suction and 2 1-2 inch discharge. The hoist is a double Jencks, 35 horse-power, and there is a boiler of 25 horse-power. The skip is automatic and dumps into an ore bin at the shaft head. From this the ore is loaded into cars, as required, and carried to the mill by a tramway, a distance of 800 feet.

The mill, a new one, has 50 stamps, 30 of which are in operation. It has automatic feeder and rock-breaker. The frame is being put in. There are 5 Wilfley tables, one for each 10 stamps. About 60 tons are crushed per 24 hours. The engine is of 150 horse-power, and is supplied with steam from two boilers of 100 horse-power each. The mill is lighted by electricity.

GENERAL REMARKS.

The mines have been remarkably free from accidents during the year, and so far as I have information there was no fatal accident, though there were a number of minor accidents. I find that the managers of these mines have been careful about the safety of their men, and note with pleasure the attention paid to pillars, timbering and methods of working.

I have the honor to be,

Your obedient servant,

M. BLUE,

Deputy Inspector of Mines.

REPORT ON WAVERLEY, RENFREW AND MILL VILLAGE MINES.

RENFREW.

"Big Five" Mining Company. This company commenced work about April, 1900. Mr. Shaughnessy is manager, with J. D. Horn as underground foreman, and six men employed.

Before the above company commenced operations, the ground on which they are now working had been opened by a shaft 60 feet deep, dipping to the south at an angle of 42, and a level driven to the west about 25 feet.

This work has been extended as follows:—

The level above mentioned has been driven 25 feet further, and a cross-cut commenced to the north at a distance of about 30 feet from the shaft.

The shaft has been deepened to 110 feet (from surface), and level No. 2 has been driven 25 feet east.

The belt ranges in width from 4 feet to 6 feet, and in level No. 1 the face shows two veins; hanging wall lead about 6 inches and foot wall lead about 4 inches; also a slate seam in centre of belt which between shaft and cross-cut contained a small rich lead. This seems to have pinched out "going" east.

These three veins do not appear in the bottom level (No. 2), and I am informed by the manager that they disappear into the hanging wall between the two levels. Owing to the poor facilities presented for a thorough examination and the short time at my disposal I was unable to verify this.

In the cross-cut, which is only in some 5 or 6 feet, two more veins are exposed 4 inches and 5 inches respectively. These are cutting across the strata vertically, and have a slightly steeper dip.

In the bottom level (No. 2) only one vein is shown in the face, averaging about 5 inches in width. Stoping has been carried on between the cross-cut and shaft towards the surface. A cross-sectional faulting occurs in level No. 1, just west of the cross-cut, making a throw of some 18 inches.

The mine so far appears quite dry, no pumping being necessary. One "Rand" air drill is employed in driving and cross-cutting. This company have been and are operating the "Free Claim" Mill, which has no license. When I mentioned this to the manager he said that they were unaware of the fact, as they only had the mill under a short lease.

E. Thompson's Property. C. Thompson is in charge of this property, and has engaged Mr. Robinson and twelve men, the former as underground foreman.

The belt is opened by a shaft 105 feet deep, opened close to the boundary line of the Big Five Company's property. At 65 feet a drift has been opened to the east about 44 feet, and at bottom level another has been opened in the same direction for the same distance. At the bottom level a drift was commenced west and driven about 15 feet, but discontinued, as it was found by survey to be encroaching on the adjoining property. Three leads show in the face, making 12 inches or more of quartz. These are displaced near the shaft by a cross sectional fault of some 18 inches or more.

A small amount of stoping has been done between the drifts.

WAVERLEY.

Waverley Gold Mining Company. This mine, which formerly used a tunnel as a means of output, has now a shaft driven from the top of the hill, which, connecting with an upraise and winze, descends at an even inclination of 53 degrees westerly on the vein to the bottom of the mine, 435 feet from deck-head.

As is popularly known, this mine is situated on the western inclination of the dome of the great eastern anticlinal of the district. The vein being worked which follows the strata round the anticlinal axis, is composed of corrugated ore, termed "barrel quartz," and contains streaks and bands of calcite and is well mineralized.

It maintains an average width of about 18 inches as so far shown by the mine workings. Levels have been driven at the following depths and to the following distances and in the directions shown :—

No. 1 down 115 feet, north-east 325 feet and south-east 330 feet.
No. 2 down 215 feet, north-east 245 feet and south-east 560 feet.
No. 3 down 315 feet, north-east 175 feet and south-east 200 feet.
No. 4 down 415 feet, north-east 20 feet and south-east 25 feet.

From the shaft depth shown above, this provides for a sump of 20 feet. However, although at the time of my visit the water had been allowed to rise to level No. 3, it is a very dry mine, no pump being necessary as yet.

This is partially accounted for by the tunnel which affords a natural drainage for the mine above level No. 2. This tunnel is open from a point in No. 2 level 320 feet southerly from shaft, and runs westerly (approximately in prolongation of the "strike" of the anticlinal axis) on a level 640 feet to surface of hillside.

From this it is apparent that the shaft is down on the northern or north-western dip of the vein. At a point in the tunnel about

300 feet from its mouth a slate belt, containing about 30 per cent. of quartz and about 12 feet in width, has been exposed by a small cut in the north wall. Though at this point the quartz is feathery and deposited in a most erratic manner, it is the opinion of Mr. McNulty, the manager, that at a greater depth it will become more concentrated, and it is his intention to prove this by a horizontally inclined westerly boring as soon as the shaft has been deepened to 565 feet, where the next level will be driven.

As the previous output of this mine came principally from the levels and a comparatively small amount of stoeping has been done, an enormous body of ore, the value of which is practically known from frequent and systematic tests, is exposed in actual mining sight.

In level No. 2, at a point north-easterly 220 feet from the shaft, a clean cross-sectional fault or slip has occurred, and whether the vein is to be found above or below is as yet a matter of conjecture. The level was driven some 25 feet further, but no quartz was uncovered.

That it is only a local dislocation is, I think, amply proved by the fact that in the next level above (No. 1,) which has crossed the apparent plane of fault, no disturbance or sign of it is shown.

The level below, No. 3, has not yet been extended far enough to prove anything in regard to the matter.

In level No. 1, at a point 180 feet from the shaft south-easterly another shaft, known as the "Pig" shaft, is open to the surface, a distance of some 65 feet. This is one of the points at which borings by diamond drill were conducted to prove subordinate veins not cropping on the surface. Up to date I have been unable to obtain any authentic account of these records.

Development work and stoping is rapidly being pushed forward by the aid of a 9 Rand (No. 2) air drills, a record of 50 feet of driving having been recently attained by one drill in a day.

The mill, which has only been completed within the past few months, is an exceptionally large one, containing six batteries of 10 stamps each. Of the 12 setts of plates, six are 9 feet in length; four are 12 feet, and two are 14 feet. The intention of the management is to have all the plates a uniform length of four feet. The concentrates are saved by four Wilfley tables—one to each battery working, as they are only using from 20 to 40 stamps. The batteries have been cleaned up several times, but to date no returns have been made to the Department from the new mill.

The whole plant, including batteries, concentrators, air compressor plants, electric lighting, is run by water power carried from Fall River, over two miles away, by open ditch sluice and flume, utilizing a 15-inch turbine wheel and a Pelton wheel.

MILLS VILLAGE.

Prospecting of a somewhat systematic and determined character during the season of 1899 recalled attention to this district, which for some years has remained practically idle.

By the consolidation of several properties early in 1900, the Gold Eagle Mining Company was formed.

Since then development and construction work has progressed steadily.

A new 10 stamp mill (provided with space for 10 more) is practically completed, as are also a shaft house, large dwelling and cook-house, stables, outhouses, etc.

Below ground Noble Crowe, Esq., is systematically prosecuting development work in a clear-headed manner.

A shaft is down on a slate belt about 170 feet.

The underlie (about 75 degrees to 80 degrees) is to the south. The belt averages over 30 inches, as so far proved, though it is widening to the deep. The material of this belt, though all milling, contains about 30 per cent. of quartz, and it is being economically worked with hand drills.

At 113 feet from surface levels have been driven each way—west 60 feet and east 75 feet.

A commodious ore bin has been constructed here for the accommodation of ore, brought to the shaft from other veins by cross tunnels, two of which are being driven from this place—one, south 35 feet to cut a vein the drift of which has been discovered on the surface, and the other north 25 feet, to intersect a vein which has already been proved on the surface.

Steam drills are used for this work as well as for sinking.

The intention of the management is to drive levels east and west at every 100 feet, blocking out the mine and enabling the ore in actual mining sight to be calculated on before stoeping is commenced From the work already done it is evident that the mine shows about 5,000 tons of ore in present mining sight, while upwards of 1,000 tons have been placed on the dump ready for crushing.

Wood costs in this district about $2.60 per cord, so that the use of coal is at present out of the question as fuel.

MISCELLANEOUS MINERALS.

Copper Ore. During the past season there has been no work calling for special reference. In Cape Breton County work was practically suspended on the Coxheath areas, but considerable prospecting was done by Mr. W. N. Young and others in the district between Sydney and Louisburg. Additional work was done at Polson's Lake and at Lochaber, in the County of Pictou, confirming the opinions already expressed that workable deposits are found there.

In Pictou County the Copper Crown Mining Company started their furnace at Pictou, but as the working was not satisfactory it has been determined to remodel it. Work was continued for part of the summer at the mines, and about 650 tons extracted, about half of which is reported to run from 4 to 8 per cent., and the balance 12 to 15 per cent. of copper. Further details of the mines are given by Mr. Weatherbe.

PALMER MINE.

This mine is situated on the west branch of the Wallace River, about three miles from the "Valley Road" at Wentworth, and about 5 miles from Wentworth Station, on the I. C. R.

The ore occurs here in the form of grey sulphurets, coated and stained in places with a film of green carbonate, also vitreous copper ore in interstratifications of bluish clay and shale contained in a country rock of reddish sandstone, which in turn is interstratified with a conglomeritic sandstone.

The formation here, as well as at Lower Wentworth and New Annan, belongs to the lower carboniferous period.

The particular belt being worked by this company is from two feet to 12 feet in thickness, as shewn by development work up to date. The strata here dips from about 1 in 6 to 1 in 9 in a northwesterly direction.

A slope has been driven about 250 feet on the drift trending gradually to the left or westward, and gradually dipping deeper as it is driven into the bank. At a point 40 feet from the mouth a drift has been opened to the left of the main slope. This drift, dipping slightly at first, becomes level and finally rises till it runs out of the belt. It turns rapidly back towards the main slops as it progresses until, at the working face, I believe it almost overlies the main slope.

It is connected with the slope by a "cross-cut" beginning at a point about 100 feet from slope mouth. At this point about 12 feet of ore is disclosed, while at the point where the 'cross-cut meets the drift there is only 5 feet in the face.

A wooden "brattice" is carried down the slope to the junction of the drift for ventilating purposes, where formerly a "Sturtevant" fan and boxed fanway was used.

As the workings were full of water, little could be seen in this direction, and the above account is chiefly based on reliable information extracted from an interested party who was with me on the ground.

From the foregoing it would appear that one of two alternatives presents itself—either the belt has pinched out or the workings have forsaken it. I am rather inclined to think the latter is the case.

Considerable money has been expended on the surface, the work done including the construction of a heavy wooden breakwater, bridge and road, and the erection of a plant, including a 12 horse-power boiler, engine, and hoisting drum, and the necessary buildings.

Another opening about 150 yards or so up stream and higher up in the rock formation has exposed another belt of ore.

I am informed that the company are seeking a chemical means of reducing this ore, as owing to its plastic nature it is said to be unsuitable for the "rolls."

LOWER WENTWORTH.

Chisholm Mine. Wallace River Copper Mining Company. I visited this mine on Monday, May 14, 1900, and found it idle, having been opened in February last and worked up till about May 10th. It is situated on the southern bank of Crowley's Brook, which runs into Wallace River from the west, and about three-quarters of a mile from said river.

The strata, which dips in a south-westerly direction at an inclination of about 1-6, has been opened by two slopes driven on the dip, and about 150 yards apart.

The western tunnel has been driven on the dip 37 feet, and though (on account of the water) in neither case could I correctly ascertain the exact conditions at working faces, from what I could see of the roof, floor and exposure aolng the banks, etc., I gathered the following facts:

The mineralized belt is a hard whitish sandstone, containing copper carbonates and a little copper and iron sulphides. The mineral, as far as can be ascertained from an inspection by the eye, is very sparingly distributed except in occasional streaks where the mineral is associated with a carboniferous material, probably lignite. This belt is about 3 feet thick, and is overlaid by a streak of blue clay about 4 inches in thickness. Above that is the hard red sandstone.

Underneath the belt is a sandstone conglomerate 4 feet thick, and underneath this is a softer light colored highly micaceous sandstone.

The other tunnel, situated down stream, is in about 25 feet. The belt is a blue clay, and shale said to contain copper in paying quantities, though little is present to the eye.

A dark carbonate streak, probably a sulphuret, is the only indication present to the eye.

This bed is from 3 1-2 to 4 feet thick, and is overlain by a harder red keel rock.

NEW ANNAN.

Copper Crown Mining Company. This company is situated on the French River, about five miles from Tatamagouche Station, on the Short Line branch of the I. C. R. Mr. Wilson is manager on the ground.

Mining is being conducted on both sides of the river. On the east side a tunnel was driven 50 feet, but abandoned, and a shaft sunk on top of the hill some hundred feet or so to the north. At a depth of 80 feet this shaft intersected the belt, and is to be connected with the tunnel by a drift. The shaft has a 10 inch pump.

The ladderway is properly boxed and platformed at every 10 or 15 feet. The men travel in the tub, but I spoke to the manager regarding this matter, and warned him that he would be held responsible in case of accident.

The belt shows about 6 feet face in this shaft.

A twenty horse-power engine is employed for hoisting and working the Cornish pump. The boiler which supplies these is of 50 horse-power, but is old and worn, and could hardly be considered safe.

The hoisting drum has no brake, and though the engine is reversible, if anything happened to the friction gear, an accident would certainly ensue.

The manager promised to have this matter remedied also. On the west bank of the river a tunnel has been driven in a curving direction for over 200 feet. The belt shows about 6 feet of ore in the main face, but in places has pinched out altogether.

The belt here contains quantities of lignite.

Colonial Mining Company. This is a New York company, and their mine is situated about three-quarters of a mile further down the French River than the Copper Crown Company's property.

A shaft is being sunk on the east side. It is down some 70 feet, and is I believe to be sunk some 300 feet in all.

As the manager and Prof. Dana (who is in general charge) were away, it was impossible to get accurate information as to the company's operations.

Some little work has been done on the west bank as well.

New machinery has been installed, including a 120 horse-power boiler and small engine; also a Blake steam pump.

LANSDOWNE.

Copper Crown Mining Company. This property is situated about three miles from Lansdowne Station, on the eastern extension of the Intercolonial Railway.

The ore here may be said to be a mixture of quartz and quartzite gangue, containing copper and iron pyrites. It is intersected by slate belts and has a steep dip.

The mineralized portion is so irregularly disseminated through the country rock (quartzite) that it is a difficult matter to calculate the ore in mining sight.

Mr. Arthur Ives is foreman, and with about 12 men employed, has opened the property in four or five places.

Two adits have been driven in the face of the hill, one some 30 feet above the other.

The upper one is driven 80 feet, and is said to show 27 inches of ore. The lower one is in 60 feet. At 40 feet a room has been broken out and levels driven at right angles some 20 or 25 feet. A pillar has been left standing on the north side. A shaft has also been sunk here by windlass) about 30 feet on the incline, and a tunnel has been commenced, to extend under the road and brook. At the end of this adit an upraise is being made to connect with the upper adit.

To the north-west and on top of the hill a shaft has been sunk 40 feet vertically and 75 feet on the incline to meet another tunnel driven from the bank above the road. This tunnel is in 137 feet, and I was informed by Mr. Smith, one of the company, who was on the ground, that some 400 feet of sinking would yet have to be done before the shaft would meet the tunnel.

The ore from this mine is being shipped regularly by rail to the smelter at Pictou.

I have the honor to be,

Yours obediently,

D. WETHERBE, C. E.

IRON ORE.

During the past year some attention has been paid to testing the more prominent deposits. The Torbrook ores in Annapolis County have received a good deal of attention. A large bed from 6 to 10 feet in thickness has been traced from Black River, near the county line westward, and, passing a short distance south of the Leckie lead, is believed to represent the well-known shell bed. Several other beds of workable dimensions have been opened along the horizon represented by this bed over a distance of between five and six miles. The ores run from 48 to 55 per cent. of metallic iron. Late in the fall the five inch core Calyx drill belonging to the Provincial Government was secured, and the bed drilled through at a depth of 300 feet beside the Torbrook Road. At this depth the bed was about nine feet thick. Arrangements are being made to move the drill about one and a half miles to the westward, and there to test the bed at a depth of 500 feet. This drill has been working in an almost vertical hard slate and quartzite, and has given satisfactory results. These explorations have shown a wonderful regularity in the measures at Torbrook, and there is no doubt of a very large amount of ore in the properties tested running into many millions of tons.

At Arisaig, in Antigonish County, a large number of deposits of red hematite have been prospected to a limited extent. Should they prove regular in their contents and extensions, there should be a large and accessible supply of ore at this point.

Analyses are said to show iron contents from 49 to 65.5 per cent., phosphorous from .212 to .530 per cent., and silica trace to 8 per cent.

Mr. Neville reports visiting Whycocomagh at the close of the year. A number of pits and trenches have proved sound during the season, and have the extension of iron ore on the property of the Cape Breton Iron Company for a distance of nearly two miles. Previous reports have stated that a number of beds had been opened in this district. The additional work done this year has been on a bed of very good quality, running from five to seven feet in thickness. It is to be desired that this locality should at an early date be thoroughly prospected. The deposits here are very large and of good quality.

Should the explorations turn out as anticipated this district would furnish a cheap and valuable source of iron ore.

Barytes.—Messrs. Henderson and Potts worked their mine at Cape Rouge, Inverness County, and mined about 800 tons of a high grade ore.

Manganese.—Practically no work was done last year.

Tripoli.—The Bass River Company continued working. The Truro exports show 910 tons, valued at $18,684.00. The Victoria Tripolite Company, operating at St. Ann's, has got under way and made large sales during the past year.

Oil.—Borings have been continued during the summer in the vicinity of Lake Ainslie, but as yet, so far as is known, without success.

Plaster.—Work continued light at the various quarries, but an increased output is anticipated next year.

Lead.—During the summer the shafts of the Cheticamp Lead Company were deepened and new levels started to more effectually prove the deposit. Work will be continued during the winter. As the plant was not capable of concentrating to 50 per cent. galena, experiments have been in progress for some time, resulting in improvements which will work satisfactorily. Assays show:—

	Lead per cent.	Per ton Gold.	2000 lbs. Silver.
Unroasted producted before concentration	20·78	oz. ·133	oz. 18.1
Unroasted concentratos	52 97	·40	37·2
Tailings	1·95	·10	5·1

By crushing, sizing, and concentrating on Wilfley tables, a very satisfactory separation is made of the pyrites and zinc blends, resulting in concentrates which will find a ready sale.

" ias been a little prospecting work done in the district, lead and copper bearing veins have been reported from

TABLES.

LIST OF MINERAL LEASES (OTHER THAN GOLD.)

IRON.

No. of Lease.	Name of Owner.	County.	Agent or Owner.	Address.
232	Brookman, P.	Cape Breton		
102	Smith, W	"		
103	McKenzie, H. R	"		
104	McKenzie, J. W	"		
258, 259, 260, 261	McPherson, M A	"		
238	Matheson, A.	"		
43, 44, 47, 48, 49. 50, 51, 52, 53, 54, 55 56, 57, 58, 59	Bartlett, J. H.	Pictou		
68, 71, 83	Nova Scotia Steel Co	"		
67	Cameron, C. A	"		
61	Cameron, J. A	"		
82	McMillan, J. R.	"		
10	Fraser, W. J	Inverness		
57	Cape Breton Iron Co	"		
22	McMillan, J. R	"		
5	McDougald, J	Antigonish		
7	McDonald, G	"		
8, 9, 10, 11	Cowlan, G. B	"		
1, 2	Nova Scotia Steel Co	Guysboro		
1	McIntosh, J. C	Hants		
12	Matheson, J	Richmond		
2	Miller, J. C	Halifax		

	COPPER.			
126	Matheson, A.	Cape Breton		
95, 106	Cape Breton Copper Co	"		
105, 181	Burchell, J. E.	"		
94	McKenzie, D.	"		
244	Granger, B.	"		
116	Greener, J.	"		
228	McKenzie, J. A.	"		
6	Hardman, J. E.	Victoria		
5	Cove, J. W	Colchester		
132, 133	Paige, S. K	Cumberland		
56	Harrison, H	Inverness		
58, 59	Inv. Mg. Co	"		
55	Cheticamp Gold Mg. Co	"		
5	Fraser J. H.	Antigonish		
6	Brown, R. C	"		
88	Holmes, S. H	Pictou		
	COAL.			
83, 84, 85	Barton, A. McG	Pictou		
3/1, $\frac{1}{28}$, $\frac{2}{42}$, 3, 4, 69	Acadia Coal Co	"		
5/12, $\frac{6}{13}$, $\frac{7}{14}$, 66	Intercolonial Co.	"		
46, 8/6, 70, 68	Nova Scotia Steel Co	"		
86	Murray, S.	"		
10/24	Richey, M. H	"		

LIST OF MINERAL LEASES (OTHER THAN GOLD.)—*Continued.*

COAL.—(*Continued.*

No. of Lease.	Name of Owner.	County.	Agent or Owner.	Address.
11/11, 45, 9/10	Gray, B. G	Pictou		
56, 22/51, 74, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104	Canada Coals & R'y. Co	Cumberland		
19/44, 55, $\frac{16}{6}$, $\frac{17}{7}$, $\frac{18}{8}$, $\frac{20}{52}$, $\frac{21}{55}$, 61, 62, 70, 71, 72, 73, 75, 76, 77, 78, 79, 81, 82, 83, 84, 85, 87, 88, 90, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 141, 118, 119, 120, 121, 122, 123, 124	Cumberland Rail'y. Coal Co	"	J. R. Cowans.	Springhill.
8/5	Lawson Coal Mining Co	"		
6/12	Londonderry Iron Co	"		
15	Prospect Mining Co	"		
9/22, $\frac{10}{28}$, $\frac{11}{28}$, $\frac{12}{29}$, $\frac{13}{30}$	Styles Mining Co	"		
23/53	Binney, J. W	"		
57	Salt Springs Coal Co	"		
26/16	Minudie M. & T. Co	"		
60, 61	Tupper, C. H	"		
105	Leckie, R. G	"		
94, 65	Faulkner, G. E	"		
126, 66, 67, 68, 69, 128, 129, 125, A	Cowans, J. R	"		
80	Gue, T. R	"		
86	Rutherford, J	"		
91	Fraser, H. R	"		

89, 131	Hickman, J. S	"		
34, 107	Weatherbe, U. J	"		
106	Vroom, W. E	"		
125	Francklyn, Geo. E	"		
14	Joggins C. M. Association	"		
24/47, 25/9	Boston Coal Mg. Co	"		
94	Bipley, E	"		
$\frac{48}{53}$, $\frac{49}{52}$	Moore, R. G. M			
13/79, 1/27, 2, 3, 28, 29, 30	General Mining Association	Cape Breton	R. H. Brown	Sydney Mines
173, 58/67	Weatherbe, R. L	"		
111, 164	Sydney Coal Co			
45/5, 46/28, 47/29, 50/40, 51/41, 52/42, 60/54, 61/55, 62/56, 63/57, 64/58, 65/59, 66/60, 67/61, 68/62, 69/63, 108, 109, 110, 188, 207, 140, etc.	Dominion Coal Co	Cape Breton	H. Donkin	Glace Bay.
117, 246	Hamilton, A. G	"		
142	LeCras, Henry	"		
220, 214	Cayley, H. St. Q	"		
179, 180, 168, 190, 208, 223, 241	Roberts, F	"		
112, 113, 114, 115, 118	Cowans, R	"		
130	Mitchell, A. B	"		
212, 131, 128, 129, 134, 135, 136, 139, 144, 182, 200, 219	Moseley, E. T	"		
138, 149, 184, 224	White, A. J	"		
141, 177, 244, 213	Cumberland Ry. & Coal Co	"		
235, 146, 193, 194, 216	Gowrie & Block House Collieries	"		
166	Dunn, J	"		
242	Can. Oil & Coal Co	"		
247	McNeil, H. F	"		
161	Routledge, T	"		

LIST OF MINERAL LEASES (OTHER THAN GOLD.)—*Continued.*

COAL.—(*Continued,*)

No. of Lease.	Name of Owner.	County.	Owner or Agent.	Address.
169, 170, 183	McVey, Jas	Cape Breton		
178	Routledge, E	"		
165	Stephens, L. H	"		
163, 185	Hamilton, C. F	"		
199	Copeland, J. D	"		
243, 171, 174	Gorham, J. W	"		
211, 233, 236	Burchell, J. E	"		
215	McKinnon, D. L	"		
234	Ross, H	"		
186, 187, 202, 205, 206, 209	Kennelly, D. J	"		
210	Harold, T. C	"		
196, 237, 222	Routledge, T	"		
201, 221	Hickey, C	"		
192	McKenzie, J. A	"		
175	McDonald, J. W	"		
225	Cossitt, G. G	"		
167	Murray, J	"		
191, 197	McVicar, J	"		
229	Matheson, D	"		
218	Morrison, D	"		
217	Townshend, James	"		
248	McMillan, J	"		

251	Caldwell, T.	Cape Breton		
226	Stephen, A	"		
227	Johnson, J. A	"		
231	Owen, J. M.	"		
7	Dominion Coal Co	Victoria		
1/2	Burchell Bros	"	J. T. Burchell.	N. Campbl't'n
1/13	McGregor, J. D	Inverness		
7/10, 6/4	Shannon, S. L.	"		
8, 9	Fraser, J. W	"		
11	Dawson, G	"		
19, 20	Smythe, J. J	"		
13, 14, 15, 18, 23, 24, 25, 28, 40, 41, 45, 46, 47, 48, 49, 50, 51. 52, 53, 54, 60, 61	Broad Cove Coal Co	"	W. P. Hussey.	Broad Cove
26	McKenzie, J. W	"		
3/11, 27	McKenzie & Mann	"		
29, 30	Tremaine, E. D	"		
35, 38, 39	Ross, W.	"		
43, 44	Farquhar, J. A.	"		
31	Sutherland, W. A.	"		
32, 33, 34, 42	Wallace, T. A.	"		
1, 7, 8	Terminal City Co	Richmond		
2	Columbia Coal Co.	"		
3	Reynolds, W. K.	"		
5	Chisholm, W.	"		
4, 6, 9	Lennoxville T. & C. Co.	"		
11	Eastern Dev. Co.	"		
13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33	H. Pearl	"		

COAL—SALES.

NAMES.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	Year 1900.	Year 1899.
NOVA SCOTIA:						
Land Sales.	113,447	98,648	76,653	90,457	379,205	336,807
Sea Borne..	130,141	94,815	114,076	145,663	484,695	392,670
Total N. S.	243,588	193,463	190,729	236,120	863,900	729,477
N'w Brunswick	92,175	109,137	109,421	95,786	406,519	327,504
Newfoundland	35,479	25,525	25,073	13,230	99,307	106,755
P. E. Island ..	25,734	46	20,756	21,567	68,103	66,881
Quebec	195,433	32,564	314,399	391,833	934,229	1,029,288
West Indies...	....	....	....	....	....	6,044
United States .	151,290	188,618	146,065	138,300	624,273	153,188
Oth'r Countries	....	....	....	1,215	1,215	....
Total	743,699	549,353	806,443	898,051	2,997,546	2,419,137

COAL—GENERAL STATEMENT.

1900.	Production.	Colliery Consumption.	Sales.
1st Quarter..................	786,775	49,807	743,699
2nd "	756,983	58,606	549,353
3rd "	834,945	45,749	806,443
4th "	859,542	54,920	898,051
Total........	3,238,245	209,082	2,997,546

COAL PRODUCE OF NOVA SCOTIA FOR YEAR ENDED SEPTEMBER 30, 1900.

COLLIERY.	Produce.	Sales.	Colliery Consumption.	
			Engines	Workmen.
Joggins	67,290	55,456	7,131	1,490
Jubilee	85	58	27	
Scotia	525	417		58
Springhill	428,904	403,170	18,448	7,275
Acadia	294.884	258,378	32,290	5,291
Intercolonial	244,000	226,535	14,158	3,326
Dominion Coal Co	1,930.425	1,808.694	65,476	22,565
Nova Scotia Steel Co	249,910	225,932	16,277	11,756
North Sydney	7,222	7,180	115	342
New Campbellton	12,426	9,891	1,743	792
Port Hood	2,323	1,770	443	79
Broad Cove	56			
Mabou	195	65		
	3,238,245	2.997,546	156.108	52,974

TABLE A.—COAL TRADE BY COUNTIES FOR THE YEAR ENDED SEPTEMBER 30, 1900.

	CUMBERLAND.		PICTOU.		CAPE BRETON.		OTHER COUNTIES.		TOTAL.	
	Raised.	Sold.	Raised.	Sold	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.
1st Quarter	122,202	114,667	143,561	130,135	516,201	494.939	4,811	3,958	786,775	743,699
2nd "	132,835	120,940	133,419	110,842	489.426	317,153	1,303	418	756,983	549,353
3rd "	123,334	114,389	134,605	124.041	573,252	565,243	3,754	2 770	834.945	806 443
4th "	118,433	109,105	127,299	119,895	608,678	664.471	5,132	4,580	859,542	898,051
Total...........	496.804	459,101	538,884	484,913	2,187,557	2,041,806	15,000	11.726	3,238.245	2,997,546

TABLE B.—COAL SALES BY COUNTIES.

	CUMBERLAND.	PICTOU.	CAPE BRETON.	OTHER COUNTIES.	TOTAL.
NOVA SCOTIA:					
By Land	116,535	230.003	30,868	1,799	379,205
By Sea	....	39,380	438,390	6,925	484,695
N. S. Total	116,535	269,383	469,258	8,724	863,900
New Brunswick	285,948	52,251	68,122	198	406,519
Newfoundland	....	278	97,96	1,061	99,307
P. E. Island	....	42,546	23,997	1,560	68,103
Quebec	52,296	120,455	761,295	183	934,229
West Indies	....	....	....	....	....
United States	3,107	....	621,166	....	624,273
Other Countries	1,215	....	....	....	1,2 5
Total	459,101	484,913	2,041,806	11,726	2,997,546

Nova Scotia Coal Sales, 1785 to 1900 (inclusive.)

Year.	Sales.	Total.
1785	1,668	
1786	2,000	
1787	10,681	
1788		
1789		
1790		14,349
1791	2,679	
1792	2,143	
1793	1,925	
1794	4,085	
1795	5,330	
1796	[illegible]	
1797	6,000	
1798	5,948	
1799	8,967	
1800	8,981	51,048
1801	5,735	
1802	7,700	
1803	6,001	
1804	5,976	
1805	10,130	
1806	4,908	
1807	5,119	
1808	6,616	
1809	8,919	
1810	8,000	70,452
1811	8,516	
1812	9,570	
1813	9,744	
1814	9,808	
1815	9,346	
1816	8,619	
1817	9,284	
1818	7,920	
1819	8,682	
1820	9,980	91,527
1821	11,3 8	
1822	7,512	
1823	27,000	
1824		
1825		
1826	12,600	
1827	12,149	
1828	20,907	
1829	21,035	
1830	27,209	140,820
1831	37,170	
1832	50,969	
1833	61,743	
1834	50,813	
1835	58,434	
1836	107,503	
1837	118,042	
1838	106,730	
1839	145,962	
1840	101,198	839,951
1841	[illegible]	Forw'd 1,208,15
1842	[illegible]	
1843	[illegible]	
1844	[illegible]	
1845	[illegible]	
1846	[illegible]	
1847	[illegible]	
1848	[illegible]	
1849	[illegible]	
1850	[illegible]	1,533,7
1851	[illegible]	
1852	[illegible]	
1853	[illegible]	
1854	[illegible]	
1855	[illegible]	
1856	[illegible]	
1857	[illegible]	
1858	[illegible]	
1859	[illegible]	
1860	[illegible]	2,399,319
1861	[illegible]	
1862	[illegible]	
1863	[illegible]	
1864	576,[illegible]	
1865	[illegible]	
1866	[illegible]	
1867	471,185	
1868	[illegible]	
1869	541,795	
1870	568,277	4,927,330
1871	596,418	
1872	785,914	
1873	811,1 6	
1874	749,127	
1875	706,795	
1876	634,207	
1877	657,665	
1878	693,511	
1879	688,628	
1880	954,659	7,317,430
1881	1,035,014	
1882	1,250,179	
1883	1,297,523	
1884	1,261,650	
1885	1,254,510	
1886	1,373,666	
1887	1,519,684	
1888	1,576,692	
1889	1,755,107	
1890	1,786,111	13,910,13
1891	1,849,945	
1892	1,752,934	
1893	1,485,9 4	
†1894	2,019,742	
1895	1,831,357	
1896	2,047,133	
1897	2,013,421	
1898	2,135,397	
1899	2,419,137	
1900	2,997,546	20,552,5
	Total	51,848,7

SUMMARY.

1785 to 1790	14,349	1841 to 1850	1,533
1791 to 1800	51,048	1851 to 1860	2,399
1801 to 1810	70,452	1861 to 1870	4,927
1811 to 1820	91,527	1871 to 1880	7,317
1821 to 1830	140,820	1881 to 1890	13,910
1831 to 1840	839,9 4	1891 to 1900	20,552

*Nine months only. †Fiscal year begins Oct. 1 and ends Sep. 30. (Cap. 4, Acts 1893).

Statement of persons employed at each Coal Mine, during the year ended September 30, 1900.

COLLIERY.	UNDERGROUND.				ABOVEGROUND.				CONSTRUCTION.				TOTAL.		HORSES.		Pits worked.
	Skilled Labor.	Labo'rs.	Boys.	Days' Labor.	Skilled Labor.	Labo'rs.	Boys.	Days' Labor.	Skilled Labor.	Labo'rs.	Boys.	Days' Labor.	Persons.	Days' Labor.	Above.	Below.	Days' App
Joggins	80	66	21	46,604	7	59	11	21,323	2	..	..	24	246	67,951	5	5	276
Jubilee	2	....	1	65	1	....	....	25	2	..	..	24	6	114	....	..	60
Springhill	393	311	116	271,431	80	162	30	75,825	1	1	..	426	1094	347,682	12	30	270
Acadia	251	251	68	145,037	63	156	40	74,090	....	..	..	....	829	219,127	16	30	299
Intercolonial	196	125	97	113,614	46	85	23	47,041	2	3	..	932	577	161,587	11	19	298
Dominion	992	860	200	544,898	186	464	60	203,979	56	290	1	12,900	3109	761,777	40	224	280
N. S. Steel	336	52	90	124,033	73	104	37	61,760	3	13	2	4,544	710	190,337	9	54	281
North Sydney	18	3	......	3,594	2	1	....	516	....	..	..	....	24	4,110	1	..	208
Port Hood	7	2	......	478	4	1	....	486	....	..	..	....	14	964	....	..	76
Mabou	2	2	......	376	....	....	....	....	13	..	..	686	17	1,062	2	..	99
	2,277	1,672	593	1,250,130	462	1032	201	485,045	79	307	3	19,536	6626	1,754,711	96	362	....

COAL.

NOVA SCOTIA EXPORTED TO THE UNITED STATES.

Years.	Tons.	Duty.	Years.	Tons.	Duty.
1850	118,173	24 ad.	1876	71,634	75
1851	116,274	"	1877	118,216	"
1852	87,542	"	1878	88,495	"
1853	120,764	"	1879	51,641	"
1854	139,125	Free.	1880	123,423	"
1855	103,222	"	1881	113,728	"
1856	126,152	"	1882	99,302	"
1857	123,335	"	1883	102,755	"
1858	186,743	"	1884	64,515	"
1859	122,720	"	1885	34,483	"
1860	149,289	"	1886	66,003	"
1861	204,457	"	1887	73,892	"
1862	192,612	"	1888	30,198	"
1863	282,775	"	1889	29,986	"
1864	347,594	"	1890	50,854	"
1865	465,194	"	1891	25,431	"
1866	404,252	"	1892	13,883	"
1867	338,492	$1.25	1893	16,099	"
1868	228,132	"	*1894	79,837	40
1869	257,485	"	†1895	73,097	"
1870	168,180	"	‡1896	174,919	"
1871	165,431	"	1897	106,279	"
1872	154,092	75	1898	98,027	"
1873	254,760	"	1899	153,188	"
1874	138,336	"	1900	624,273	"
1875	89,746	"	....	......	....

NOTE.—The quantities given for the years 1852 to 1872 are on the authority of the Board of Trade, Philadelphia, and are probably under-estimated.

*Nine months only.

†NOTE.—After August 1st, 1894, duty on Round Coal 40 cents, on Culm or Slack, 15 cents.

‡Fiscal year begins October 1st, and ends September 30th. (Cap. 4, Acts 1893).

COLLIERY CONSTRUCTION ACCOUNT, 1900.

COLLIERY.	Shafts.	Slopes.	Levels.	Machinery.	Colliery Buildings.	Dwellings.	Surface Works.	Railways.	Wharves.	Prospecting.	Total.
Jubilee	$......	....	25	6	......	......	......	......	......	......	31
Joggins	....	....	......	1,588	......	......	3,998	......	......	......	5,586
Springhill	....	....	......	6,113	......	......	......	......	......	......	6,113
Acadia	....	....	......	4,520	......	......	......	......	......	......	4,520
Intercolonial	2,140	....	......	4,776	1,357	......	......	474	......	......	8,747
Dominion Coal	....	....	......	......	......	......	......	......	......	......	......
N. S. Steel Co.	8,199	....	......	1,903	136	5,081	10,636	......	......	786	26,741
Sydney Coal Co.	....	105	......	10	40	......	12	......	......	......	167
Cape Breton Co.	....	....	33	......	250	......	......	......	......	......	283
Mabou	....	333	......	......	103	......	696	......	282	......	1,414
Port Hood	....	1,578	1,000	5,149	460	......	......	......	......	......	8,177
	10,339	2,006	1,058	24,065	2,346	5,081	15,342	474	282	786	61,779

GENERAL GOLD STATEMENT.

Year ending Sept. 30th, 1900.

DISTRICT.	Days' Labor.	Tons Crushed.	Average yield of Gold per ton.			Total yield of Gold.		
			Oz	Dwts.	Grs.	Oz.	Dwts.	Qrs.
Oldham	.....	1519	....	18	2	1379	16	8
Sherbrooke	34632	17711	....	5	9	4763	12	9
Wine Harbor	13975	3691	....	11	7	2088	17	0
Lake Catcha	6415	756	....	13	10	507	3	6
Montague	436	636	....	15	3	481	3	7
Harrigan Cove	......	1813	....	18	19	1705	9	12
Brookfield	13333	9291	....	5	20	2726	16	13
Renfrew	......	459	9	13	22	4450	15	22
Caribou & Moose River	8348	8348	....	3	21	1633	6	23
Stormont	33467	28238	....	5	11	7745	18	10
Salmon River	17959	8825	....	2	7	1027	14	..
Other Districts	19913	4457	....	8	11	1888	11	..
	......	65744	....	....	....	30399	14	14

PRODUCTION BY DISTRICTS FROM 1862 TO 1900.

DISTRICT.	Tons Crushed	Total Yield of Gold.			Average Yield per ton.			Value @ $19 per Oz.
		Oz.	Dwts.	Grs.	Oz.	Dwts.	Grs.	
Caribou & Moose River.	124500	41814	6	18	..	6	17	794,472.42
Montague	26140	40606	10	14	1	11	1	771,524.06
Oldham	48243	52382	....	12	1	1	17	995,258.48
Renfrew	48601	38320	4	..	..	15	18	728,083.80
Sherbrooke	226169	138406	16	9	..	12	5	2,629,729.56
Stormont	176170	66545	16	3	..	7	13	1,264,370.32
Tangier	46938	22831	14	15	..	9	9	433,802.90
Uniacke	54362	38509	15	7	..	14	4	731,685.53
Waverley	123383	61711	15	5	..	10	..	1,172,523.45
Salmon River..........	117175	41487	5	20	..	7	2	788,258.55
Brookfield............	43975	21098	17	22	..	9	14	400,879.03
Whiteburn	6394	9554	17	18	1	9	21	181,542.87
Lake Catcha	23023	24340	8	5	1	1	3	462,467.80
Rawdon	12178	9594	15	10	..	15	18	182,300.65
Wine Harbor..........	49070	26872	8	2	..	10	22	510,575.68
Fifteen Mile Stream....	32893	16403	9	5	..	9	23	311,665·75
Malaga	20292	18563	2	8	..	18	7	352,699.22
Other Districts	81800	48837	6	5	..	11	22	927,908.90
Total.............	1261306	717881	10	10	..	....	..	13,639,748.97

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.

MONTH.	Brookfield.							Renfrew.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Grs					Oz.	Dwts.	Grs.
October	1	1251	50	919	222	16	....	1	....	..	60	304	18	....
November	1	1163	46	703	265	17	....	1	....	..	71	198	18	....
December	1	1082	43	806	311	15	....	1	....	..	....	...	..	....
January	1	1199	47	750	198	5	5	2	....	..	....	...	..	....
February	1	1078	43	823	191	18	....	2	....	..	50	3	18	18
March	1	1190	47	865	259	13	....	2	....	..	21	20	3	11
April	1	1160	46	761	147	12	9	2	....	..	....	...	..	....
May	1	1203	48	632	265	12	19	2	....	..	80	815	18	18
June	1	1091	43	700	185	10	....	2	....	..	42	395	3	18
July	1	941	37	737	188	9	4	2	....	..	25	7	9	5
August	1	1007	40	709	303	18	....	2	....	..	....	...	..	....
September	1	968	38	886	185	10	....	2	....	..	110	2704	6	....
Total	..	13333	..	9291	2726	16	13	..	....	..	459	4450	15	22

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	Caribou and Moose River.							Stormont.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Grs.					Oz.	Dwts.	Grs.
October	2	1076	43	901	156	4	4	3	1775	71	2979	670	1	....
November	2	776	31	980	126	19	5	3	1834	73	2528	605	2	....
December	2	741	29	854	122	16	....	3	1721	68	2332	464	3	....
January	2	1257	50	1090	168	11	....	3	4677	187	503	288	..	....
February	2	1133	45	605	160	11	22	3	4334	173	2414	498	5	10
March	2	984	39	458	112	14	....	3	4688	187	2633	674	..	....
April	2	313	12	310	62	8	....	3	3749	149	2251	853	2	....
May	2	546	21	839	174	..	11	3	4380	175	2718	846	..	....
June	2	553	22	831	211	14	18	2	4882	195	2515	953	2	....
July	3	715	28	254	122	16	....	2	455	18	2564	807	12	....
August	3	836	33	619	110	16	10	2	508	20	2520	589	16	....
September	3	856	34	607	103	15	1	2	464	18	2281	496	15	....
Total	..	9786	..	8348	1633	6	23	..	33467	...	28238	7745	18	10

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—*(Continued)*.

MONTH.	OLDHAM.							SHERBROOKE.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Men.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Grs.					Oz.	Dwts.	Grs.
ber	1	......	....	115	109	14	..	2	2835	113	1800	399	..	.
November	1	......	....	265	221	9	6	2	2826	113	1975	465	..	..
December	1	......	....	380	319	18	18	3	2550	102	1156	368	..	..
January	2	......	....	52	65	8	..	3	2843	113	1560	403	..	..
February	2	......	....	......	....	..	..	2	1800	72	1250	411	..	..
March	2	......	....	137	138	7	..	2	2484	99	1168	400	11	..
April	2	......	....	120	82	10	12	2	2300	92	1726	436	7	..
May	2	......	....	132	147	12	..	2	3131	125	1700	403	2	..
June	2	......	....	57	45	3	..	2	3094	123	1915	445	6	9
July	2	......	....	52	97	..	..	2	3606	144	1220	341	6	..
August	2	......	....	102	92	..	..	3	4504	180	1100	340	..	..
September	2	......	....	107	60	13	20	2	2659	106	1141	351	..	..
Total	..	......	....	1519	1379	16	8	..	34632	....	17711	4763	12	9

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—*(Continued.)*

MONTH.	MONTAGUE.							HARRIGAN COVE.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Grs.					Oz.	Dwts.	Grs.
October	1	100	4	70	73	13	15	1	......	....	27	6	..	..
November	1	63	2	71	67	13	3	1	......	....	153	113	5	..
December	1	86	3	100	39	13	18	1	......	....	238	181	2	..
January	1	68	2	78	34	6	..	1	......	....	40	18	1	2
February	1	78	3	......	41	7	..	1	......	....	......	......	..	..
March	1	41	2	......	40	11	..	1	......	....	15	4	5	20
April	2	......	....	188	75	7	..	1	......	....	126	143	..	..
May	2	......	....	26	12	9	14	1	......	....	201	240	14	..
June	2	......	....	53	13	2	13	1	......	....	210	203	11	..
July	2	......	....	24	69	2	16	1	......	....	247	315	..	..
August	1	......	....	26	13	17	..	1	......	....	233	248	12	..
September	..	......	....	......	......	..	..	1	......	....	323	232	8	14
Total	....	436	....	636	481	3	7	....	......	....	1813	1705	19	12

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	Wine Harbour.							Lake Catcha.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Grs.					Oz.	Dwts.	Grs.
October	2	880	35	195	228	11	..	2	584	23	83	68	7	..
November	2	1161	46	329	318	12	..	2	396	15	119	86	12	6
December	2	1071	42	240	182	..	..	2	491	19	122	76	14	..
January	2	969	38	220	186	..	..	2	531	21	......	...	...	..
February	2	1028	41	270	133	17	..	2	499	19	73	58	5	..
March	2	1205	48	448	210	15	..	1	553	22	54	33	15	..
April	2	1322	52	360	161	12	..	1	1038	41	164	50	15	..
May	2	1124	45	300	156	4	..	1	953	38	57	26	10	..
June	2	1254	50	280	137	10	..	1	914	36	20	25	17	..
July	2	1253	50	422	168	14	..	1	102	4	......	...	.	..
August	2	1401	56	141	55	1	..	1	130	5	20	19	8	..
September	2	1307	52	486	150	1	..	1	224	9	44	61	10	..
Total	....	13975	....	3691	2088	17	..	..	6415	..	756	507	13	6

MONTHLY STATEMENT FROM EACH GOLD DISTRICT.—*(Continued).*

MONTH.	Salmon River.							Unproclaimed and other Districts.						
	No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.			No. of Mines.	Days' Labor.	No. of Men.	Tons Crushed.	Yield of Gold.		
					Oz.	Dwts.	Grs.					Oz.	Dwts.	Grs.
October	1	2908	116	2500	250	..	..	5	2494	99	1148	339	8	11
November	1	3700	148	......	....	..	..	4	3257	130	1020	455	5	19
December	1	2540	101	2000	182	..	..	4	2174	87	252	164	18	10
January	1	3300	132	......	....	..	..	4	3129	125	335	109	..	..
February	1	2352	94	2100	348	..	..	5	2149	86	621	312	17	15
March	1	3159	126	......	....	..	..	5	1978	79	290	77	11	18
April	1	......	....	......	....	..	..	5	275	11	187	52	11	..
May	1	......	....	......	....	..	..	4	280	11	366	129	19	11
June	1	......	....	1640	186	10	..	4	165	6	112	94	7	..
July	1	......	....	585	61	4	..	4	1257	50	47	47	4	..
August	....	......	....	......	....	..	..	4	1381	55	20	41	19	..
September	....	......	....	......	....	..	..	4	1374	55	59	63	8	12
Total	....	17959	....	8825	1027	14	..	....	19913	....	4457	1888	11	..

INTERCOLONIAL RAILWAY.

ving the various kinds of Coal (in tons) received from the different Mines for use of the Intercolonial Railway from the 1st October, 1899, to 30th September, 1900.

	Canada Coals and Railway Company, "Joggins."			Cumberland Railway and Coal Company, "Springhill."			Acadia Coal Com. "Acadia," "Albion" and "Vale."					Intercolonial Coal Mining Company, "Drummond."				General Mining Associati'n		Dominion Coal Co. Round.	Elkin Coal Com. Hampton Round.	Burchell Bros., New Campbellton, C. B. Round.	Consolidated Scotia Coal Co. Maccan.	R. S. Hibbard. River Hebert.
f.	Round.	Run of Mine.	Slack.	Round.	Run of Mine.	Slack.	Round.	Run of Mine.	Nut.	Blacksmith.	Coke.	Round.	Run of Mine.	Nut.	Pea & Slack.	Round.	Run of Mine.					
		tons.						tons.						tons						tons.		
tober, 1899....	1203	436	....	118	13848	....	4259	1156	17	81	....	2155	499	....	....	691	199	......	......	......	40	....
November, "	358	818	....	164	13239	....	5452	46	....	143	....	4872	149	....	....	1331	....	......	33	48	....	....
December, "	486	2100	....	221	9011	....	5918	......	....	37	....	6024	37	24	63	1986	....	......	......	......	....	....
January, 1900....	1696	65	....	4998	58	....	6097	......	37	82	16	5077	....	....	....	1574	....	1523	......	......	....	....
February, "	1445	......	....	5673	......	....	4091	......	143	....	....	5091	....	6	32	796	....	3333	......	......	....	....
March, "	1710	193	18	6409	54	....	4749	......	88	44	....	4655	....	....	57	360	....	3192	......	....	....	....
April, "	683	573	....	4675	4284	....	6095	......	....	88	....	4713	....	....	17	......	....	3682	......	......	....	....
May, "	441	3522	18	10570	45	....	2899	21	19	18	....	3930	....	....	....	......	....	4371	......	......	....	....
June, "	46	4087	....	5905	......	....	5466	......	....	37	13	2447	....	....	....	......	....	3434	......	......	....	....
July, "	3404	45	....	5906	......	158	7461	22	....	71	....	682	....	....	....	221	....	2877	......	......	....	....
August, "	2600	......	....	3220	4633	100	6025	......	....	24	....	1508	....	....	6	1056	....	2833	......	......	133	35
September, "	2145	......	....	6025	60	301	3904	......	....	111	....	1217	....	....	....	155	....	2619	......	......	22	38
	16217	11839	36	53884	45232	559	62416	1245	304	736	29	42371	785	30	175	8170	199	27864	33	48	195	73

INTERCOLONIAL RAILWAY.

Statement shewing the number of Tons of Coal received at the following Stations from the Mines in Nova Scotia during the year ended the 30th September, 1900.

Destination.	Tons.	Destination.	Tons.
Halifax	65,300	North Sydney	32
Dartmouth	42,711	Sydney	65
Waverley	972	Belmont	34
Bedford	806	Debert	21
Windsor Junction	15,737	East Mines	88
Wellington	21	Londonderry	2,501
Enfield	615	Wentworth	21
Elmsdale	417	Thomson	7
Milford	21	Greenville	6
Shubenacadie	413	Oxford	1,241
Stewiacke	555	Fountain Road	6
Brookfield	96	Pugwash	1,173
Truro	12,749	Wallace	254
Valley	128	Malagash	81
Riversdale	17	Tatamagouche	621
West River	73	Urquhart's Siding	26
Glengarry	39	Denmark	105
Hopewell	1,250	Wallace Bay	13
Ferrona Junction	90,743	River John	684
Stellarton	10,104	Meadowville	65
Sylvester's	538	Tannery Siding	6
New Glasgow	8,659	Scotsburn	185
Trenton	41,562	Scotch Hill	226
Pictou Landing	45,214	Pictou	12,318
West Merigomish	45	Salt Springs	6
Merigomish	227	Spring Hill	33
Avondale	74	Athol	21
James River	7	Nappan	6
Antigonish	3,068	Amherst	15,274
Heatherton	64	Aulac	234
South [illegible]er	13	Sackville	4,488
Bayfi[illegible]	5[illegible]	Dorchester	1,606
Trac[illegible]	33	Memramcook	275
H[illegible]	32	Shediac	948
M[illegible]	1,133	Point du Chene	312
[illegible]	98	Moncton	15,122
[illegible]	7	Salisbury	1,819

INTERCOLONIAL RAILWAY—*(Continued).*

Destination.	Tons.	Destination.	Tons.
Petitcodiac	311	Trois Pistoles	13
Sussex	317	Riviere du Loup	2,633
Norton	36	St. Henri Junction	16,021
Bloomfield	35	Chaudiere Junction	4,148
Hampton	880	Levis	7,547
Nauwigewauk	15	Drummondville	44
Rothesay	119	St. Hyacinthe	1,572
Coldbrook	3,603	Beloeil	46
St. John	72,814	St. Lambert	3,846
Kent Junction	401	Montreal	38,864
Rogersville	18,125	G. T. Ry., via Montreal.	2,987
Chatham Junction	18,162	" " Ch're Jct.	1,527
Millerton	159	C. P. Ry., via St. Rosalie	64
Newcastle	78		
Gloucester Junction	832	Total	584,594
Bathurst	165		
Jacquet River	13	SUMMARY.	
Nash's Creek	10		
New Mills	17	Stellarton	258,979
Charlotte	15	Westville	25,283
Dalhousie Junction	28	New Glasgow	17,203
Dalhousie	90	Albion	24,192
Campbellton	476	Sydney	52,826
Metapedia	3,063	Spring Hill	191,845
St. Octave	14	Maccan	14,266
Rimouski	73		
Bic	12	Total	584,594

CUSTOMS OF CANADA, TRURO, DEC. 8TH, 1900.

Value of mineral entered outwards from this port from Oct. 1st, 1899, to Sept. 30th, 1900:

Gold Bullion	$13,055.00
Tripoli, 910 tons	18,684.00

GEO. P. NELSON,
Collector.

PORT OF HALIFAX.

PRODUCTS OF THE MINES EXPORTED.

From October 1st to December 31st, 1899.

ARTICLE.		The Product of Canada.		Not the P'duct of Canada.		Total.	
Abestos		......	......	.....	....	....	......
Coal	Tons.	8,737	26,230	83	493	8,820	26,723
Gold Quartz.........		......	......	.....	....	....	......
Mineral Water		......	......	.....	....	....	......
Oil, Coal & Kerosene.	Gals.	.....	......	4,308	312	4,308	312
Ores, Manganese....	Tons.	13	429	.....	....	13	429
Ores, Other (Chromic)		......	......	.....	....	....	......
Plumbago		......	......	.....	....	....	......
Salt	Bush.	......	......	32,082	5,959	32,082	5 959
Gold in Bars	$	......	70,349	.....	....	....	70,349

PORT OF HALIFAX.

PRODUCTS OF THE MINES EXPORTED.

From January 1st to September 30th, 1900.

ARTICLE.		The Product of Canada.		Not the P'duct of Canada.		Total.	
Asbestos	Tons.	......	......	....	....	....	......
Coal	Tons.	37,441	117,007	27	163	37,468	117,170
Gold bearing Quartz.	$	......	......	....	....	....	......
Gypsum, Crude...	Tons.	700	875	....	....	700	875
Mineral Water......	Gals.	135	10	....	....	135	10
Oil, Coal & Kerosene.	Gals.	20	5	3,577	336	3,597	341
Ores, Manganese....	Tons.	8	633	....	....	8	633
Ores, Other (Chromic)	Tons.	......	......	67	1,675	67	1,675
Plumbago, Crude ...	Cwt.	651	825	....	....	651	825
Salt	Bush.	......	......	30,795	6,093	30,795	6,093
Gold in Bars	$	.....	126,346	....	....	....	126,346

INERALS EXPORTED TO THE UNITED STATES* FROM THE PORT OF WINDSOR, N. S., FROM 1ST OCTOBER, 1899, TO 30TH SEPTEMBER, 1900.

	AMOUNT.	VALUE.
Gypsum	122281 Tons.	$114,222 00
Sand	260 “	1.040 00
Manganese	8 “	400 00
Gold Bullion	162 Ozs.	3,210 00

* NOTE.—None exported to any other countries.

IRON ORE

Returns Grant Mine, Bridgeville, Pictou Co., Nova Scotia Steel ompany, Limited:

Iron Ore Mined..........................15,507 Tons

Average monthly number of persons employed and days' labor:

	Above Ground.	Days.
Skilled Laborers	5	116
Laborers	6	109
Boys	2	37
	Below Ground.	**Days.**
Skilled Laborers	13	305
Laborers	15	341

REPORT

OF THE

DEPARTMENT OF MINES,

NOVA SCOTIA.

For the Year ending 30th September, 1901.

HALIFAX, N. S.:
COMMISSIONER OF PUBLIC WORKS AND MINES, KING'S PRINTER.
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1902

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DEPARTMENT OF MINES.

REPORT FOR THE YEAR ENDED SEPTEMBER 30, 1901.

To His Honour THE HONOURABLE ALFRED GILPIN JONES,
Member of the King's Privy Council for Canada,
Lieutenant-Governor of Nova Scotia, &c., &c.

MAY IT PLEASE YOUR HONOUR,—

I respectfully present herewith to Your Honour the Annual Report of the Inspector of Mines, containing an account of the progress of mining operations, together with statistical information compiled by him from official and other returns.

I am,

Your Honour's obedient servant,

A. DRYSDALE,
Commissioner of Public Works and Mines.

HALIFAX, *January 2, 1902.*

REPORT

ON THE

MINES OF NOVA SCOTIA.

BY EDWIN GILPIN JR., A. M., LL.D.

FELLOW OF THE ROYAL SOCIETY OF CANADA, ETC., ETC.

OFFICE OF INSPECTOR OF MINES,
HALIFAX, *December 28th, 1901.*

TO THE HONOURABLE
A. DRYSDALE, M. P. P., M. E. C.,
Commissioner of Public Works and Mines:—

Sir,—I beg leave to submit the following report on the Mines of Nova Scotia.

The following summary shows, so far as I have been able to learn the mineral production of Nova Scotia for the year ending September 30th, compared with that for the year ending September 30th, 1900.

		Year ending Sept. 30, 1900.	Year ending Sept. 30, 1901.
Gold	oz	30,399	30,537
Iron Ore*	Tons	15,507	419,567
Manganese Ore†	" *	8	10
Coal raised†	"	3,238,245	3,625,365
Coke made†	"	62,000	120,000
Gypsum†‡	"	122,281	135,637
Grindstones, etc	"	56,500	315
Limestone†	"	50,000	95,794
Barytes		783	600
Tripoli and Silica		1,100	800
Copper Ore		600	
Pig Iron			90,034

---

* Including imported ore.
† Ton of 2,240 lbs.
‡ Amount exported.

NOTE—Further details will be found in the tables at end of report.

Statement showing Amounts and sources of Revenue received by Mines Department during Year ended September 30th, 1901.

Rents	$ 5938 00
License to Search	17160 00
Coal Royalty	367925 46
Gold Rentals	7709 00
Gold Royalty	10997 61
Rentals other than Gold or Silver	11100 00
Leases " "	4150 00
Pros. Licenses	11639 00
	$436619 07
Fees	1107 71
	$437726 78
Less amount at the rate of 6¼ cents in each ton of coal consumed in the manufacture of Iron and Steel in Nova Scotia paid to the Dominion Iron and Steel Company, August 16, 1901	$2630 44

During the past year surveys have been made in a number of the gold mining districts. Much difficulty has been experienced in getting the necessary surveys for the issue of coal and other leases. The number of available Crown Land Surveyors is comparatively limited. They are largely employed in surveying work which pays them better than Government work at the rates allowed.

The collection of minerals referred to as forwarded to the Paris Exhibition, was transferred with the other Canadian minerals exhibits to the Glasgow Exhibition. At the close of this Exhibition, at the request of the Dominion Government, the Nova Scotia minerals, with the exception of some gold ores, will be placed in the Canadian Department of the Imperial Institute, London.

Work has been continued in the Museum during the past year, and the classification and arrangement of the materials has been continued. During the coming summer a full and complete set of Nova Scotia minerals will be collected and installed, as it was found better to let the collection sent to Paris and Glasgow, remain in London. When this is accomplished the Museum will furnish a good and representative exhibition of the natural products of the Province, which cannot fail to be of interest and value to parties desirous of information about our natural resources.

The Science Library has now been installed and arranged in an appropriate room with facilities for reading and consultation. It combines the libraries of the Nova Scotia Institute, the Nova Scotia Mining Society, and the technical works of the Legislative Library.

In addition to this, the Legislative grant has enabled the department to provide it with a number of books of reference. Judging from the progress made, in a few years this library will become one of the most useful science reference libraries in Canada. Mr. Piers has prepared a report on the Museum and Library, which will be printed.

The Library is already utilised to a considerable extent by those engaged in the study of our resources, natural history, etc.

The usual examinations have been held for granting certificates to Managers, Underground Managers and Miners. It was found impossible to arrange for an examination for granting certificates to Mechanical, Engineers. The following list gives the names of those receiving certificates as Managers, etc.:

CERTIFICATES GRANTED AUGUST 20TH, 1901.

Johnson, John,	Port, Hood,	Manager.
Quigley, Jos.,	Broad, Cove,	"
Cassidy, John,	Westville,	Foreman.
McPherson, Wm. A.,	Springhill,	"
McPherson, Jas. E.,	"	"
Langille, Bert.,	"	"
Fox, Herbert,	"	"
Moss, Joseph,	"	"
Scott, Jas.,	"	"
Brace, John,	"	"
Stewart, Alexr.,	Joggins,	"
Davison, J. W.,	Glace Bay,	"
Jardine, Duncan,	Sydney Mines,	"
Tobin, William,	"	"
McLeod, Joseph,	Dominion No. 1.	"
Lauchlan, Robert,	Westville,	Under Manager.
Brown, John M.,	"	"
Henderson, James,	"	"
Morrison, Dan.,	"	"
McKenzie, Jas. G.,	"	"
Stewart, Thos.,	Stellarton,	"
Welsh, Moses,	Springhill,	"
McLeod, Alex. K.,	"	"
McNeil, Alex. S.,	Dominion No 1	"
Lynch, Andrew	Caledonia Mines,	"
Welton, Richard	"	"
Lind, Edw. A.,	Reserve Mines,	"

Much interest was taken in the arbitration between the Dominion Coal Company and some of their employees. This arbitration was held under the Miners' Arbitration Act. I give at the end of the report the finding of the arbitrators and the report of Mr. Justice

Graham, the chairman of the Board. Difficulties between the Nova Scotia Steel and Coal Company, were reported to have been settled under the provisions of a Dominion Act bearing on arbitration.

It is sincerely to be hoped that in future arbitration will always be resorted to when differences arise between masters and men.

The losses inflicted on both sides by strikes and lockouts are felt not only by the parties directly interested, but their effects are widespread on the community in which they occur, and on the general public. The collection, exploitation and preservation of capital form the basis of industrial advancement. The capitalist and the workman are equally dependent on the public opinion and judgment which provides the means of opening mines, building mills, railways, etc.

The Department has one steam diamond drill, two hand diamond drills, and two calyx drills. These drills have been used at Torbrook, Annapolis County, at Westville, Pictou County, at Hantsport and Kennetcook, Hants County, and at Whycocomagh, North Sydney, and Lingan Basin in the Island of Cape Breton. Further details under this head will be found in a report from Mr. Weatherbe.

COAL TRADE.

The returns of coal sold during the year 1901 show, when compared with those of the year 1900, as follows:

	1900	1901
Nova Scotia	863,900	998,814
New Brunswick	406,519	349,994
P.E. Island	68,103	53,773
Newfoundland	99,307	105,620
Quebec	934,229	1,017,046
West Indies	———	———
United States	624,273	590,086
Other Countries	1,215	4,002

The production was 3,625,365 tons compared with 3,238,245 tons in the year 1900.

The total sales were 3,119,335 tons compared with 2,997,546 tons during the preceding year.

The sales show no marked changes. The Nova Scotia sales are increased by the operations of the Dominion Iron and Steel Company. The sales to Quebec show a slight increase, and those to the United States have fallen off a little. A small shipment has been made to Europe, and statements are made that there is a good opening for Nova Scotia coal in Northern Europe and at some points in the Mediterranean.

CUMBERLAND COUNTY.

During the year the production was 478,226 tons compared with 496,804 tons during the year 1900. The Springhill Collieries raised 410,440 tons, and the Joggins Mines raised 66,065 tons.

PICTOU COUNTY.

This County produced last year 490,168 tons against 538,884 tons in 1900. The Acadia Company raised 271,145 tons, and the Intercolonial Company raised 219,023 tons. During the summer the Nova Scotia Steel and Coal Company opened a Colliery on one of the seams of the Marsh group between New Glasgow and Thorburn. By an arrangement with the Acadia Coal Company the seam will be worked on the areas of both Companies from the same slope. During the coming season this Colliery is expected to produce about 200 tons a day. It is stated that the coal will not be placed on the market, but will be mined for use at the steel works, as it is stated to be particularly adapted for use in the convertors.

The following report by Mr. Cameron on the operations in Pictou and Cumberland will give details for the different collieries in those counties:—

SPRINGHILL, Nov. 4th, 1901.

E. GILPIN, ESQ.,

Deputy Commissioner and Inspector of Mines.

SIR:—I have the honor to submit to you herewith a report on the various mines in the districts of Pictou and Cumberland Counties for the year ending September 30th, 1901.

DRUMMOND COLLIERY, PICTOU COUNTY.

NOS. 1 AND 2 SLOPES.

This mine is at present worked through three lifts known as Nos. 12, 13 and 14. In the former the coal is all won except a pillar 40 feet by 200 feet. When this is extracted, the lift will be closed. The south levels of No. 13 have been extended a distance of 3504 feet. Nos. 1 and 10 balances were driven. The latter has been practically worked out, and the former has just been put through to the lift above. The north levels of this lift have been driven to the boundary 3,056 feet.

Nos. 1 and 4 balances have cut through, and 5, 6 and 7 are being driven. The levels of No. 14 lift have been extended north and south during the year. Nos. 3 and 4 balances have been turned away on the north side, while No. 1 balance is being driven on the south side. The No. 2 slope is being driven up through this lift. The fan shaft which is 325 feet deep, and is sunk to the No. 5 level is having its area enlarged from 68 to 108 square feet. This work began in March last and is about completed. The airways in this mine have been enlarged and repaired, and the ventilation is good.

SCOTT PIT.

In this mine work was continued on the Nos. 1, 2 and 3 lifts. On the No. 1 lift, No. 2 and No. 3 balances were extended on the bords, and No. 1 was well advanced. Early in January, 1901, work in this mine was totally suspended.

NO. 4 SLOPE.

The pillars in this slope referred to in Mr Blue's report of last year were all extracted. No. 1 lift was opened out, and a number of pillars taken out. On No. 4 lift the levels were cleaned up, and retimbered, and balances driven in order to effect the removal of several pillars. A pair of slants were driven south near the bottom of the slope, and bords were driven on each side of the slants, and several pillars taken out. The old Findlay incline and level below has been cleaned up and retimbered for 500 feet. An opening into some of the pillars of the north incline, in a few places has driven into a large block of coal. This mine has been put in a thorough state of repair, and the ventilation is good.

ACADIA MINES, WESTVILLE.

During the past year the coal in No. 9 lift has been worked out, and at present the coal is being taken from No. 10 lift. On the south side, the coal at the boundary, and along the waste to the rise, is being steadily withdrawn toward the slope. The inside plane-way known as No. 10 is worked out, and at present 6 planeways outside of this one are being worked. A block of coal 1,500 by 325 feet. between the slopes and the present works remains to be taken out. On the north side the coal along the fault is nearly all extracted, as well as a large portion to the rise. There still remains on this side a block of coal 700 feet by 300 feet near the slope, and a pillar of coal 1,200 feet by 70 feet next the level.

Preparations are being made to sink No. 11 lift, and a commencement will be made in a few weeks. The distance from the main slope to the sinking slope is a little more than twice the former distance, and this will allow for larger sidings at the new slope bottom. The return airways have been considerably improved, and the ventilation is fair. On the surface a number of improvements have been made. A new carpenter's shop has been built, and now the blacksmith's, machine and carpenter's shops are under one roof. When the changes contemplated on the surface are carried out, the above ground plant will be largely renovated.

ALBION MINES, STELLARTON, N. S.

NO. 2. SLOPE.

Early in July the main bottom was moved further down, the length of the new level being 900 feet. On the levels going west, at a distance of 1,452 feet from the new bottom a stone drift has been driven connecting with the third seam and the deep seam coal which is not taken out from this drift. This drift enters near the new bottom in the third seam. The length of the levels in the deep seam through the stone drift from the working face is 3,168 feet. In the deep seam there are two balances working, two balances are ready for work, and three driving up. The coal is of good quality in this section of the mine. The level in the third seam from the new bottom to the working face is in a distance of 3,630 feet, and there are no balances turned away. The coal continues good. The levels going east in the third seam have been standing for a few years owing to fire damp. The length of these levels to the working face is 990 feet. These levels were started again on August 24th, and a balance turned away close to the working face.

There is a pit called the Stapple Pit, 150 feet from the new bottom on the east side. This pit, 120 feet, connects the third seam with the deep seam. The coal is dropped from the deep seam to the third seam by means of a counter balance on the same principle as the ordinary back balance. Through this shaft two full boxes can be dropped in one minute.

On the west side the length of the levels in the deep seam from the Stapple Pit to the working face is 1,848 feet. There are two balances driven up ready for work. One driving up. On the east side of the Stapple Pit to the working face the old levels are in 2,376 feet. These levels will be worked connected with the English slope, which will be used as an intake airway.

There are two balances working on the east side. No. 6 balance on the west side is finished, except four stumps, 40 by 47 feet.

No. 5 balance on the west side of the old bottom is still working, and the coal is lowered to the new bottom by an incline.

ALBION MINES.

NO. 1 SLOPE.

This slope was abandoned a number of years ago owing to a severe explosion. It is being re-opened again. It is now cleaned and timbered and built down to the No. 2 landing. There are still four stopings to go in to complete the job. Heavy falls were encountered in cleaning up the slope, but no indications of fire or heat have been noticed as far as the work has progressed. This slope, when finished, will be used as an airway, riding slope and for lowering timber. No. 2 slope will be used entirely for hoisting coal.

MARSH COLLIERY.

This property is owned by the Nova Scotia Steel and Coal Co. of New Glasgow, who have held these leases for years past. But owing to the difficulty of getting coal to suit their purposes and knowing that the Marsh areas contained coal of gas producing qualities, having proved it so by actual trials, they decided last fall to velop the seam known as the George McKay or Four Foot Seam, and with that object in view began testing their areas by trial shafts, and after carefully going over the field they decided to sink a pair of slopes in the most convenient place, which is about four miles east of New Glasgow, and two miles west of Thorburn, and on the Sherbrook Road, and on the 1st of April broke ground for the slopes, and on the 1st of May let the sinking of the two slopes by contract, and as the company decided not to work the top or surface lift of 500′ at this time, it was necessary to sink the slope to the second lift before turning off the working levels, which they did at 875 feet, and a further distance of 83 feet were sunk for water lodgement, making in all 958 feet of slope sinking through new and wet ground in five months without any delays or accidents of any kind.

They are now putting down sills for the permanent hoisting track, and connecting the track on the bankhead to the tipple and will be completed in a few days, and then will be ready to ship coal to the N. S. Steel and Coal Company at Trenton, who is to be the only consumer, and will require from 250 to 300 tons per day for their own use.

This coal will be taken to New Glasgow by the Acadia Coal Co. on the Vale Colliery Railway, thence by I. C. R. to Trenton.

This colliery is connected to the Vale Colliery Railroad by a siding 2,100 feet long, which is all graded and complete.

Buildings for all necessary purposes are now completed; blacksmith, carpenter's and repair shops under one roof and conveniently located.

The buildings for the hoisting engine and compressor are closely located to the boiler house. The bankhead house is finished; it is low in the post compared to other collieries; this is due to the fact that the Company takes all their coal run of mine, and don't require screens.

An office, magazine, fan house, stables and wash house for men to change, are all completed. The buildings are all covered on the roof with heavy felt covered with tar and sand, the walls with steel sheets stamped to represent brick and gives a very neat appearance. The machinery consists of a hoisting engine 12¼ x 15″, made by S. Floy & Co., of Bangor, Pa., and is off the Ledgerwood pattern, with double drum friction gear, friction brakes.

The compressor for pumping and mining machines and all underground haulage is made by the Canadian Rand Drill Co., the size 13″ and 21″ x 36″ being compound steam corliss valve gear and compound air.

The boilers consist of a pair made by I. Matheson & Co., of New Glasgow, they are the multitubulan 5½ x 16′. The fan engine, made by the Robb, Armstrong Co., 8″ x 9″ high, speed automatic, oilings of latest design. The fan has a capacity of 30,000 cubic feet per minute.

The pump is 6″ x 7″ Duplex Northy, and though a considerable amount of water has been encountered, this pump handled it all without any trouble. The work to this date is by an upright boiler tubular 4′ x 8½′, an engine 8″ x 12,″ of the S. Floy make. The boilers are now built in and ready for duty. The foundations for the engine and compressor are completed; they are built of concrete and look fine, and are ready for the machinery, which is on the ground and are ready to be installed.

The company are finishing nine cottages for their employees, and intend to build quite a number in the spring.

John W. Sutherland, *Manager.*
W. A. Sutherland, *U. G. Manager.*

McGregor Pit, Stellarton.

Very little work has been done in this mine. A pipe bord is being driven 6 by 6 feet. On the surface at the Albion Mines a large machine shop has been built close to No. 2 slope, and the machinery removed from the Foord Pit to these works.

Vale Colliery.

This colliery is on a 6 foot seam which dips to the north at an average angle of 16 degrees, the coal being hoisted from a slope 2,800 feet in length. From the bottom of this slope the main levels turn off almost due east and west. On the west side, practically no development has been made during the year. On the north seam work has been done during the past three months with a view of opening up more coal; but nearly the entire output of coal comes from the east side workings. These levels have been extended 1,000 feet. No pillars in this mine have yet been drawn. During the past 4 months, the surface plant has been practically reconstructed, and put in condition capable of handling twice the present outcrop. In the mine a new stable has been built, to receive 15 horses. The mine engine has been changed from the double rope key drum system to a single rope and a roof drum operated by a clutch and brake. By this means one track only is used, and the trips are enabled to reach the lower levels without danger of stopping on the flat portions of the seam. Before, the trip consisted of 5 boxes, but now 6 are being hoisted. On the sur-
e he east of the present engine house, a new plant of 2,200
erling boilers was erected. On the bankhead, a 600 ton
ing table has been erected, and furnished with a chute
cars.

Although this mine is comparatively free from gas, the management, with the approval of the department, introduced the use of safety lamps throughout the pit last July.

JOGGINS MINES.

NO. 2 SLOPE.

At the bottom of the landing going west, the levels have been driven a distance of 500 feet in clean coal; and to the east, the levels are in a distance of 1,450 feet from the slope. At 400 feet from the slope on the east side, a downthrow of 18 feet was met, and successfully cut through. 700 feet further in a second fault was met, and cut through, which threw the coal up about 15 feet. The levels are now about 300 feet beyond this point. The thick clay is normal, with the exception of the west level, where it has lately reached a thickness of about 3½ feet. The coal in these levels is of very good quality. The Company have started sinking this slope and expect to go down for a new lift of 600 feet. The coal in these levels is working, and is being hauled by a coachway system which gives a quick and satisfactory production of coal.

JOGGINS MINES.

NO. 3 SLOPE.

The levels have been advanced between 350 and 500 feet on each side of the slope. On the east side they have reached that part of the seam in which there is a thick belt of clay, on which the upper workings are standing. The intention of the company is to persevere in driving the eastern level to prove if the thickness of this belt diminishes.

All the boilers were thoroughly overhauled and two new boilers added, which were made at No. 2 slope. The ventilation at this mine was moderate.

MINUDIE MINE.

This mine has been working continuously during the year. The slope is 5 feet by 10 feet. The first level, 70 feet from the top of the slope is in 120 feet to the face. The level going eastward, is driven 82 feet to the face, at a distance of 209 feet from the top of the slope. There is another level driven east 684 feet. There are no workings to the westward at this point, on account of the old workings which are not more than 600 feet distant, and full of water. A steam pump has been provided to take the water out of the mine, and a new hoisting engine has been installed with a new rope. Sinking operations began in July, and this slope is now down about 600 feet. The property has been operated by M. M. Sterns for the past two years but changed hands last autumn, and is now to be known as the Minudie Coal Company, Limited. The new Company intends putting in a 200 ton per day plant, which they expect to have working at an early date. At present the capacity of the small slope being worked is in the vicinity of 40 tons a day.

STRATHCONA COLLIERY.

WM. HALL, MANAGER.

This Company is working what were known as the Milner areas at River Hebert. They have cleaned out all the old slope, and have retimbered down to the water level, a distance of about 80 feet; and intend to sink to a depth of 1,000 feet. They are now building carpenter's, blacksmith's shops, and offices, and are preparing the foundation for an engine house; and expect to be able in the spring to make a good shipment of coal.

SCOTIA MINE.

This is a new slope sunk to a depth of about 100 feet with levels driving east and west. 6 to 8 men are employed along the western crop taking out coal. The ventilation is moderate for the mine, at present, but will require to be materially increased if a larger output is aimed at.

SMITH'S MINE.

During the first part of the year, Mr. G. J. Harrison employed from 6 to 15 men in this mine. The slope has been driven down about 300 feet, and the coal worked up hill by longwall system. The working of this mine was abandoned last July.

JUBILEE OR MICMAC MINE.

This mine has been leased by Mr. J. H. Patrick who employed from 6 to 20 men the first part of the year. The present levels were extended a short distance east and west. The slope was sunk a distance of 90 feet, and levels turned off. The workings in this seam which is about 2 feet thick, have been practically suspended since July.

CHIGNECTO MINE.

But little work has been done here this year beyond the employment of several men in prospecting work. This property changed hands in July, and the new owners propose to operate it, and equip it with up-to-date machinery; and they expect to do a large business.

SPRINGHILL MINES.

NO. 1 SLOPE.

In giving an outline of the work done during the year, I may say that very little has been done at this seam, except a continuation in pillar work below the 1,300 feet level.

No. 2 Slope.

In this slope a great deal of work has been done. The west levels have been extended 990 feet making their total line 5,676 feet. In Mr. Blue's last report, mention was made of the coal having been struck on September 20th in the Aberdeen tunnel. Since that date 380 feet of narrow work has been driven to the rise with boreholes well advanced up to 67 feet until the Aberdeen workings were struck.

After piercing the workings, 6 million gallons of water were pumped before an opening could be made into the old workings. This was effected on February 10th.

The level going east from the fault has been extended 1,708 feet and going west it has been driven 725 feet back to the Aberdeen fault, with 3 balances driven to the rise.

It was found that the Aberdeen slope had fallen very heavily, and that it was dangerous to timber it from below. It was therefore deemed advisable to clean up and timber it from the surface. This necessitated a bankhead, and 1,100 feet of branch line from the Springhill and Junction road; 270 feet of the upper slope was laid with sills crosswise, and 3½ inch rails. A locomotive was used to bring up all the stone and to lower the timber; and up to date 1,170 boxes of stone, and 750 feet of the slope has been made permanent. This will be used as a road for the east workings, and for sinking purposes. Levels have also been extended in the upper and lower seams eastwardly from the fault. In the former the levels were driven 1,402 feet making their total line 2,180 feet; and the latter are in a total distance of 1,630 feet.

The tunnel through the underlying seams started on the west side has received a fair share of attention during the year, as 284 feet were driven, making a total distance of 993 feet. In this cross tunnel several small seams have been struck. On the surface 4 new double flued boilers 30 feet by 5 feet were placed in position, relieving the old ones recently taken out. All the boilers are equipped with Crosby spring safety valves of the most improved type; 2 other boilers were purchased, and are now ready to be placed in position. The winding engine at this slope was repaired with new drum shaft, drum cistern feed, cast steel pinion etc., and is now in first class working condition.

No. 3 Slope.

In this slope the extraction of pillars in the 1,900 feet levels east and west was continued until the end of June when the levels were abandoned, and connections made with the 2,600 feet level.

During the year, this level was extended west for a total length of 9,528 feet. The 3,200 feet level was extended for a distance of 6,899 feet, and on the east bottom seam, a distance of 2,315 feet was reached from the slope.

The main slope seam was commenced in January, and it has been sunk 630 feet, the levels being turned off, and the fanway and pipe bord nearly completed. The fanway, pipe board and east and west returns have also received a fair share of attention. At this slope two new double flued boilers 30 feet by 5 feet have been placed in position making a battery of 12 boilers, all having been equipped with improved valves. In the case of No. 2 slope boilers a new chimney 4 by 6 feet wide, and 8 by [illegible] feet high has been placed on a brick base, making the total height of the chimney 100 feet. A complete set of mechanical stokers and blowers are in course of erection, and will be completed at an early date.

A foundation for a pair of 30 feet by 48 feet direct acting link receiving hositing engines has been completed at this slope. The engines are furnished with 2 cast iron drums 6 feet 6 inches in diameter, deep enough to hold 6,000 feet of 1¼ inch rope. The foundation, when finished, will contain 11,000 cubic feet of concrete. The engine will be covered with a brick engine house, and will add greatly to the efficiency of this colliery; 14 double dwelling houses 40 by 24 feet, have been built for the employees. These houses are of a suitable type, and will prove a great accommodation, as the supply of houses at Springhill is comparatively limited.

I may add that at the No. 2 slope the old lamp house having proved unsuitable for the purpose, a new house was built. This building is of brick with slate roof, and of the following dimension:—Full length inside, 60 feet, width 29 feet; height of lamp room, 13 feet. This building accommodates our lamp room, store room, and room used as repair shop, etc., for lamps.

The S. Hill Mines are thoroughly ventilated and great precautions taken for the safety of the workingmen.

In conclusion I may say that the large mines in my district are kept in good order, and the requirements of the Coal Mines Regulation Act are carried out.

I find great difficulty in getting the management of the small collieries in Cumberland County to fulfill the requirements of the Act.

I have the honor to be, Sir,
Your obedient servant,
A. V. CAMERON,
Deputy Inspector of Mines.

Amount of Air Circulating in Mines each Month.

MINE.	COUNTY.	1901.							
		Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.
Springhill, No. 2	Cumberland	79000	74000	74500	70800	68000	67000	69000	70000
" " 3	"	82000	84000	80200	74400	75000	76550	76600	75500
Joggins, No. 2	"	11000	14000	13000	12000	14000	12500	13000	14000
" " 3	"	Idle	Idle	Idle	9000	95000	8000	8500	75000
Jubilee Mine	"	2:00	2600	2000	Idle	Idle	Idle	1200	Idle
Smith Mine	"	3500	4000	3800	Idle	"	"	"	"
Scotia Mine	"	1200	1100	900	Idle	"	"	"	600
3rd Seam, Stellarton	Pictou	81400	75000	81600	70980	71200	71076	79600	79700
Drummond, No. 4	"	14920	16800	16000	18000	17000	17000	18000	19680
" " 2	"	30000	29000	28500	25900	24000	24800	25200	22800
Acadia	"	37200	32000	32700	32600	31200	28000	29000	29000
Vale Colliery	"	19000	18800	17600	17200	17500	16000	16800	17000
River Hibbert	"	7600	7000	6500	6000	6800	7200	7400	7100

Date of Official Inspection.

MINE.	LOCALITY.	COUNTY.	1901.							
			Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.
No. 2 Slope	Springhill.	Cumberland.	14	6	9	6	8	16	26	22
No. 3 "	"	"	15	5	8	7	10	17	27	23
No. 2 "	Joggins.	"	7	12	11	10	7	4	16	17
No. 3 "	"	"	Idle	Idle	Idle	11	7	4	16	17
River Hibbert Mine	River Hibbert	"	8	12	12	9	6	7	15	18
Jubilee Mine	Maccan	"	8	13	11	9	6	3	15	18
Smith Mine	"	"	11	11	9	6	3	8	15	13
Scotia Mine	Chignecto.	"	16	11	Idle	Idle	"	"	12	13
Chignecto Mine	"	"	16	11	Idle	"	"	"	12	13
Drummond Mine, No. 2 Slope	Westville.	Pictou.	19	19	16	21	17	9	7	4
" " 4 "	"	"	20	20	17	22	18	10	8	5
Acadia Mine	"	"	21	21	18	23	19	9	9	5
Third Seam	Stellarton.	"	22	21	17	22	18	11	8	6
Vale Colliery	Thorburn	"	23	18	15	24	15	11	7	6
Marsh Mine				18	15	23	15	11	7	6

Accidents.

No.	DATE.	MINE.	NAME.	OCCUPATION.	REMARKS.
1	Feb. 28	No. 3 slope, Spr'hill.	Frank Furlong.	Laborer.	Fatally injured by being scalded with steam.
3	" "	" " "	White and Newall.	"	Slightly " " " " "
4	Mar. 30.	" 2 " "	Chas. Foster.	Loader.	Leg broken and other injuries, being thrown off trolley.
5	April. 26	" 2 "	Joseph Arsneau.	"	Leg broken by a fall of coal
6	May 18.	" " "	Fred. Moorhouse.	Driver.	Leg broken by rake jumping track.
7	June 18	" " "	Isaac Skidmore.	Loader.	Leg broken by a piece of stone from roof.
8	Aug. 26	" " "	James Harrison.	Cutter.	Leg broken by a pot of stone falling from roof.
9	Mar. 21	" 2, Joggins Mines.	Wm Milonson.	"	Burnt with gas in long wall.
10	" "	" " "	Chas. Holmes.	"	
11	" "	" " "	Placid Gould.	"	
12	May 29	Drummond P. C.	Chas. Cey.	Loader.	Slightly hurt; caught between box and boom.
13	June 3	" Pictou.	Chas. Wilson.	Laborer.	Injured about the head on bankhead.
14	May 31	" "	Angus Sinclair.	Trapper.	Collar bone broken uncoupling rake of boxes.
15	June 15	" "	Alex. G. Wilson.	Miner.	Ankle dislocated by a fall of top coal.
16	" 7	" "	John Wright	"	Collar bone broken; caught between box and rib.
17	July 22	" "	John W. Burney.	"	Killed by a fall of top coal and stone.
18	Aug. 26	" "	J. W. McMillan.	"	Killed by a fall of coal and stone.
19	April 25	Acadia, Pictou.	Michael McDonald.	"	Slightly injured; caught by passing rake.
20	June 15	" "	Daniel Carrigan.	Boy.	Both legs broken jumping off riding rake.
21	" 20	Albion Mines.	Michael Martin.	Engineman.	Fatally injured; whirled around a shaft.
22	" 13	Vale Colliery.	James Smith.	Driver.	Fatally injured; crushed between box and rib.

CAPE BRETON COUNTY.

The sales from this county were 2,260,955 tons against 2,041806, tons in 1900. The production of the Dominion Coal Company was 2,352,507 tons as compared with 1,930,425 tons in 1900.

The sales in Nova Scotia which in 1900 were 469,258 tons rose to 631,135 tons last year, due presumably to the increasing demands of the Steel Company.

The Nova Scotia Steel and Coal Company are engaged in enlarging their shipping facilities at North Sydney, and in carrying out improvements at their Colliery. The underlying seam it is reported will be opened on a large scale.

The Dominion Coal Company are opening out their workings on the Harbor and Phalen seams in the No. 2 shafts. The slope on the Emery seam has been discontinued owing to the thining of the seam. The introduction of Electric underground haulage at the Dominion No. 1 Colliery marks a new departure in coal-mining methods in Nova Scotia.

The Gowrie and Block House Collieries have continued their deeps and have broken off rooms to the rise.

The diamond drill of the department bored three holes across the strata at Pottle's Lake, in the rear of North Sydney, but no coal was struck. In the fall Mr. McVey used one of the hand drills and extended the passage of the Lingan Basin seam from the head of the basin towards Grand Lake. I am not aware of any other exploratory work of consequence.

I append the report of Mr. P. Neville, Deputy Inspector, for the Island of Cape Breton.

REPORT FROM P. NEVILLE.

BRIDGEPORT, October 29th, 1901.

E. GILPIN, JNR. ESQ.,

Deputy Commissioner, and Inspector of Mines.

DEAR SIR,—I beg leave to forward to you a report on the Coal Mines in Cape Breton for the year ending September 30th 1901.

CALEDONIA.

est deeps have been continued and the levels and
, and rooms worked off. A large section of

pillars has been drawn between No. 2 and No. 3 levels in that district; also to the rise of the west main high level between that and the crop of the coal. The water with which the mine was flooded at the time of the fire has been all pumped out. It was found when the water receded, that all of No. 6 Section east deeps, comprising 1,300 feet of double levels with 44 rooms, some of which were driven up 400 feet, was full of explosive gas, which was successfully removed without the slightest accident. The mine water which, at times, is very heavy on account of the drawing of pillars, is now all taken out with the tanks in the water shaft which has been finished during the past year, and is working very successfully.

A new Rand Compressor has been erected equal in capacity to the one already in operation, so that at present the greater part of the mine is worked by machines, in fact all except the drawing of pillars. The new steel fan built by the Dickson Manufacturing Company of Scranton, Pa. has been constructed, and has a separate engine directly connected, so there is, at all times one fan in reserve, ready to be started at a few minute's notice in case of accident to the one running. A new dynamo was erected giving a very satisfactory lighting on surface and in the pit bottom, needed on account of working day and night. The output of this mine during 24 hours has been as large as 3,250 tons.

INTERNATIONAL MINE.

The main deeps have been driven down about 900 feet, and rooms are being driven both east and west; also a new landing made at the bottom of the deeps. The submerged district, No. 11, has had the water pumped out and the ventilation restored and is now working again. The new Northey pump is supplied with water from the feeders that came off where the pillars were taken out in No. 5 and No. 6 districts.

At present new roads are being laid in the main south level, leading directly from the shaft, and it is the intention of the management to extract all the pillars available to the rise of the point where the feeders were met last year. The district known as No. 2 has been on pillar working since my last report, and every pillar taken cleaned out and without any accident. Timbering and ventilation have been attended to, and the mine is in good condition.

A temporary engine has been placed on the surface to run the fan during the time the old fan-engine is being repaired at the general machine shop. Two new tubular boilers have been placed on the surface to be in readiness for supplying steam to an underground pump in Dominion No. 1, where it is intended to pump water up from the Phalen seam to the Harbor seam, a distance of 450 feet, delivering the water into an old level running direct to the shore.

A good substantial wash-house has been built for the workmen, and the majority of the men wash and change their clothes in it.

DOMINION NO. 2 COLLIERY.

The Harbor seam was struck at a depth of 410 feet from the surface, and two entries made into it, one on the low side of the shaft and one on the high side, and levels started north and south. They are, up to this date, each extended about 580 feet. At a distance from the pit-bottom of 350 feet north and south, two pairs of deeps have been started and are at present down about 300 feet. The seam here is six feet and a half thick and looks well, the coal proving very satisfactory. This shaft which is called the main shaft 37 feet by 11 feet has been reduced to 21 feet by 11 feet, and has tapped the Phalen seam at a depth of 850 feet from the surface, and a pump sunk 12 feet below the seam. An entry from the east side of the shaft has been driven 40 feet to the deep, and a level driven from that point north to connect with the air shaft which also has reached the coal at a depth of 862 feet 4 inches. The coal here looks well showing no splint or other impurities.

At present the work of timbering the shaft is going on as fast as possible in order to have it completed in about five months from this date. Hard pine 6″ x 6″ is used in timbering the full size of the shaft and the air partition sealed with 2 inch hard pine. It is quite necessary to have these shafts well timbered, and the walls sealed and made safe as the action of the air on the rock, shaken by the dynamite when sinking, may in course of time loosen it.

The permanent buildings on surface are:—manager's office 45x18 feet 10 foot post, wharehouse 57′x20′, 10 foot post, horse-stable 78′x32′, 10 foot post and shed attached, wash-house for miners 48′x26′, 9 foot post, carpenters'-shop 28′x26′, 9 foot post, forge and machine shop connected 75′x27′, 13 foot post covered in with steel shingles and, also a fire engine-house built of brick and covered with steel shingles. A large store is built 90′x40′, 19 ft. 6 in post, a managers' house 41′x28′, 16 foot post and 97 double dwelling-houses for the workmen 40′x24′, 13 foot post, which are all about finished.

The coal engine hoisting out of the main shaft from the Phalen seam built by Dixen & Co. is a double cylinder 34″x48″ and stroke 48″, steam pressure 120 lbs. The hoisting engine from the Harbour seam is a Corliss, built by Jenkins & Co. double engine cylinder 24″x36″, 36″ stroke, size of drums 8 feet. The man-cage engine is also built by Dixen & Co., cylinder 34″x48″, stroke 48″ steam pressure 120 lbs. The drum is a cone built, 10 feet at each end and 14 in the centre. The fan is a guibal 24 feet in diameter and 9 feet wide. The engine is "corliss" built by Dixen & Co., size of cylinder 20″ diameter, stroke 48″.

RESERVE MINE.

Two new compressors built by the Rand Drill Company have been
are giving good satisfaction. They are of the following
6″x48″, air 20″x32″x48″.

A new engine has also been set up for driving the rocker and shaker screens and also the picking belts. These are all driven by rope drivage. A new engine 60"x26" has been erected at opposite end of the main shaft of old haulage engine with a clutch which enables one or both to work at same time.

A 24 feet guibal fan is nearly completed near the east slope, about 4000 feet from the bank-head and engine-house, which is to be driven by compressed air. This fan is to ventilate the new slope workings. and the south side of the French slope workings. The old fan is to ventilate the north side of working.

Twenty double blocks were built near east slope for miners 40'x24' and 12 foot post. The main slope was extended down 700 feet and a new landing made. The French slope was extended 1000 feet and a new landing made. The east slope was also extended 1,000 feet, and a new landing made. Levels and headways were driven, in the ordinary way. Stone and brick stopping have been put in to make the necessary change for ventilation when the new fan starts.

DOMINION NO. 1.

A pair of new haulage engines. which are to take the place of the three now in use, one on surface and two in pit, is placed on surface. The rope is to be driven by grooved wheels instead of the old fashioned bull wheel. A large engine-house has been built over those engines which adds to the appearance of the place.

The foundation for a 24 foot guibal fan is finished. This is to take the place of the two Murphy fan now in use. A 12 inch Robins conveyor belt for carrying the coal to the fire room from the bank-head has also been erected and proved to be a success.

The new shaft spoken of in last year's report has been sunk, and the buntons and spears placed in, also the foundation for the engine is built.

A new wash-house 62'x20', 7½ foot post has been built for the men to wash in. It is lighted with electric light, has hot and cold water and also the building is heated.

A large K. W. dynamo was placed on surface in old haulage engine house which lights a great part of the mine, yard, bank-head and colliery buildings, and also supplies power for locomotives on No. 5 south level in the pit. This works well. This level was railed with heavy rails a distance of 1,400 feet to make it safe for the electric haulage car. Levels and rooms were extended and worked as usual. The angle deep is now being laid with large rails for a new lift of 700 feet.

The 12 foot fan which was disabled by fire July last has been repaired and is as good as new. Twenty new double block houses were built for the miners and streets made between them.

GOWRIE AND BLOCK-HOUSE.

This mine is doing well, steadily advancing the deeps out under their large sub-marine areas. When this is accomplished and the slope finished the Colliery will assume a different character. The aerial rope way system, mentioned in last year's report, has given entire satisfaction. The rope travels at the rate of fiue miles an hour, or fast if required, and is guaranted by the makers to deliver 500 tons in ten hours between the screens and the pier. The shipping pier has been extended 100 feet making in all 201 feet and can stow 800 tons of coal in the pockets. Another 75 horse power tubular boiler with smoke stack has been added to the battery first installed. The second air compressor has been put in place and connected with the first half put down. These two compressors now operate five Ingersoll coal-cutting machines, three Howell No. 2 air drill, two rock-drills and one Northey deep pump and the air for the blacksmith's forge.

The surface constructions, bankhead and screens are all in operation.

A shaft is being sunk south of the present shaft, which will be down by the end of December. This shaft is intended for ventilation and to lower and hoist workmen.

In the pit the three main deeps have been driven 1,000 feet each. Short rooms have been broken off from the third or upper deep. The pillars in these deeps are 37 feet by 60 feet long. Very little water is met with in this mine ; no heavy feeders. The water is now pumped from the mine by a Jeansville compound duplex pump placed at the pit-bottom instead of being taken out by tanks as stated in last report. The coal has proved to be of good quality as is seen by the steadily increasing demand for it. No serious accident has occurred at this mine since it started.

SYDNEY MINES. NOVA SCOTIA STEEL AND COAL COMPANY, LTD.

During the year there has not been any material addition to the surface plant at this Colliery. The erection of 30 Bauer coke ovens is completed and the washing plant is rapidly nearing completion. Three Babcock and Wilcox boilers, of 270 horse power each, have been put in at this Colliery. These boilers are to be fired with the gasses from the coke ovens, and will replace a number of the old type of low-pressure boilers now in use. These boilers are to work at a pressure of 125 lbs.

The Colliery, as usual, has worked steadily throughout the whole year. The deeps and levels have been extended and many pillars extracted with very great success. The district of long wall work on north side, referred to in my last year's report, is still giving satisfaction. The "crush" which occurred some time ago on the north side of this mine is quiet. The pit and ventilation in general are kept in the usual good condition.

A comfortable passenger car has been put on the track, for the purpose of conveying the men from the village to the mine and back. This car runs several trips morning and evening and is capable of holding 200 men. There is also a wash and dressing house for the miners, heated and supplied with hot and cold water, with a bathroom therein.

SYDNEY COAL COMPANY.

Work has been going on, on a small scale, at this Colliery during the year past. There are 15 rooms broken off, at right angles from the level and driven towards the rise or crop of the seam, in which 15 pairs of miners work. The inside room is turned off about 80 feet from the face of the level and driven about 80 feet up and the other rooms in advance of that in regular order—the outside or 15th one being up 420 feet from the level. The level has been extended and is at this date in a distance of 1,950 feet from the mine mouth. A pair of headways 600 feet in length extends from this level to the air-shaft, which is sunk through the crop of the seam. Through this air-shaft the workmen go to and from their work, and also one of the headways serves as a travelling road.

A line of stopping has been put in this season in order to assist the air to go around the face. The ventilation is fairly good notwithstanding neither fan nor furnace is in use at this Colliery.

NEW CAMPBELLTON.

This mine has been working steadily during the season. A lift of about 500 feet has been gained direct to the bottom of the slope. In this lift rooms are broken off,—right and left or on both sides of the slope and are 40 feet in width and roads on both sides of the room laid in. The pillars are about 25 feet wide. It is found in this width of room that larger coal can be obtained by holing the whole way across the room, and then shearing one side. The pressure of the roof, assists in bringing the coal down with very little powder being used. The holing is done chiefly in the clay that underlyes the coal. It is found to be quite soft in some places. The miners can dig it out quicker than they can the coal thus making but little slack. Timbering is good and the ventilation fine. The underground manager, Mr. Ferguson is a very careful man—not one accident having occurred since he took charge.

BROAD COVE MINE.

The slopes are down a distance of 985 feet gaining two lifts on each side of the slopes, and levels have been driven on both sides of these lifts a distance of 200 feet each. At the top of the upper lift a pair of levels are driven at each side of these slopes going east and west, and will be continued as return airways. At lift No. 1 on both sides east and west, balances have been driven 240 feet each and from No. 2 lift balances have been driven 350 feet each and rooms broken off from all these balances and are ready for work.

A large lodgement is made in the mine capable of holding 250,000 gallons of water—the mine making at present about 50 gallons per minute. The output at present is about 100 tons per two shifts. It could be easily increased to 300 tons per shift if required.

Two large pumps are in place in the mine—one a Knowels and the other a Northey, also two small ones for sinking. A 100 h. p. hoisting engine is erected at No. 2 slope and a large one ordered for No. 1 slope. One set of Babcock and Wilcox boilers, two vertical tubular and one horizontal have been set up. A reservoir to supply above boilers with water is completed.

A screening and picking belt plant, complete capacity about 750 tons per day, is now ready for use. Bankhead and bank-house and trestle about completed, height of bank 26 feet 6 in. size of bank-house 105x65 feet. This bank is a substantial structure framed and built of large timber.

A fan is in operation called the Schiele fan capable of giving about 35,000 cubic feet of air per minute. An engine-house is built and a boiler-house almost finished. A blacksmith's and carpenter shop are completed, also ten blocks of miners houses are being built.

Port Hood Coal Co., Ltd.

The slopes have been extended 300 feet since my last report making the whole distance down, at this date, 1150 feet. At this point levels were turned off north and south. The south levels have been driven in 1500 feet, and from them two balances have been driven and 11 rooms broken off each. Between the top of these balances and the old rise workings there is a barrier left of 50 feet in width. It was found in this mine that the action of the air on the roof made it very tender and consequently the Management decided to drive the rooms not more than 12 feet in width and booms put in across two feet apart with a centre prop under each. This has been done making the places more safe. The north levels are in 1200 feet, with two balances driven up and 11 rooms broken off each; one balance complete with one cage and drum working, and two others being put in, one on the north and the other on the south side.

On the surface a new bank-head frame has been erected with one bar screen and two knocker screens making four different grades of coal reducing the latter to duff. The picking belt has a movable jib which is raised and lowered into the cars by the same engine that operates the belt tiple and screens. This is something new and saves the breakage of coal.

There has also been erected one pair of winding engines, 250 h. p. each, cylinder 20" x 42" stroke with a pair of 7 foot drums directly connected. One of the drums is loose on the shaft so that the rope can be lengthened or shortened by the engine-man. Also there is a double 10" x 12" cylinder engine with two friction drums erected for hauling the coal out to the wharf by the tail rope system. This coal is delivered into the pockets on the pier. The coal is carried in two and three ton cars from the screens to the wharf. The pit tubs are one ton capacity. In the same building there is a 16" x 26" Rand compressor which compresses air for two Cameron pumps and two mining machines. There are also two Babcock & Wilcox boilers in a separate building, 500 h. p., guaranteed 750 h. p. There is in operation a 7 feet Buffalo fan which supplies the mine at present with air. This fan is capable of giving 40,000 cubic feet of air per minute and has done good work so far. It has been decided however that a larger one would shortly be required owing to the extensiveness of the mine and the dip of the seam and the Management has ordered a 14 feet one.

There has been built a new engine house, a compressor, and boiler house The pier has been extended 135 feet by driving piles. It was found that the block and crib work was not satisfactory as the sand followed and banked up as the wharf extented. Where the piles have been driven there has been no sand collected and 23 feet of water has been obtained, the intention is this winter to pile it out 225 feet more where they expect to have 34 feet of water.

In addition I beg leave to say that when you were in Cape Breton county about two years ago, you remarked that in your opinion that as the mining in the coal mines were extended towards the deep of seams that the pillars should be left larger owing to the additional pressure and thickness of strata. In the above case I notice by the pillars where they are small, that the weight crushes the coal and in the extracting of them it is difficult to get all of the coal, in fact in some sections of the mines not one half of the coal can be obtained from small pillars. I would suggest that as the workings of the coal mines in Cape Breton extends to the deep, that from time to time the pillars be left larger so as to suit the pressure brought on. In this way nearly all the coal could be saved which would be in the interest of the companies and Government.

Also I would wish to remark in the case of abandoning a coal mine, that such company owning such mine should be compelled to draw all the available pillars before such pit be abandoned for any length of time. That is where the roof and bottom is of such a nature as to be affected by contact with water. This is in order that the coal left in pillars should not be destroyed. This does not include mines where the roof and bottom are hard and are not affected by long standing water.

I am yours obediently,

P. NEVILLE,

Deputy Inspector of Mines.

Accidents.

DATE.	MINE.	NAME.	AGE.	OCCUPATION.	REMARKS.
ril 18.	Caledonia	Alexander Howie...	19	Laborer	Killed by runaway coal wagon in east deep.
" "	"	John McDonald	55	Miner	Leg broken " " "
" 23.	Broad Cove....	Kenneth Stuart	25	"	Killed by runaway empty wagon in bottom of slope.
" 26.	Dominion No. 3.	Andrew Anderson ..	15	Driver	Killed by fall of roof stone in room.
May 6.	Caledonia	Michael McDonald..	24	Laborer	Leg broken; caught between full wagon at pit bottom.
" 15.	Dominion No. 1.	John Carmichael ...	16	Driver	Collar bone broken; ran against a coal box.
June 1.	"	Samuel Gulen......	26	Laborer	Collar bone broken; caught between empty coal boxes at deep landing.
" 19.	"	John B. McDonald..	33	Miner.........	Killed by piece of roof stone falling on him while undercutting in room with machine.
July 11.	Caledonia	Michael McNeil	25	"	Slightly hurt about the body by fall of coal from face.
" 12.	Reserve	John Leary........	34	Laborer	Collar bone broken; between coal box and pillar.
Aug. 19.	Caledonia	Daniel McDonald...	60	Miner.........	Fatally injured by shot going off while firing squib.
" 22.	"	Arthur Carnew	22	Loader	Arm broken by a piece of stone falling on him from roof.
" 23.	Dominion No. 2.	John Purdy	22	Shiftman......	Elbow broken by a piece of chain falling down shaft upon him.
" 31.	Reserve	Henry March	30	Loader........	Fracture of leg by piece of coal at face of room.
Sept. 16.	Caledonia	Alonzo Gibbons	16	"	Leg broken by coal cutting machine falling on him from working table.

Date of Visits Inspecting Mines.

MINE.	1900.			1901.								
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.
Caledonia	1–22	12	22	24	11	8	13-19	20	5–17	15	4–21	14
International	5	6	7	8	26	15	15	18	10	22	15	30
Dominion No. 2	18	21	18	4–14	18	16	20	14	14	1	19	13
Reserve	15	3	24	10	19	14	12	16	18	25	20	16
Dominion No. 1	23	17	21	23	13	13	10	8	5	27	13	24
Dominion No. 3	25	13	13	14	12	7	29	15	12-20	8	29	13
Dominion No. 4	25	13	13	7	12	6	29	15	12	......	......	......
Sydney Coal Co	26	22	14-17	11	22	11	18	11	12	2	5	6
Nova Scotia Steel Co.	27	24	15	12	23	23	18	10	8	6	6	7
Campbellton	29	27	......	"	......	18	17	15	22	......	31	23
Gowrie and Block House	30	28	19	22	27	29	......	27	28	26	30	11
Broad Cove	......	......	......	16	......	20	25	24	......	19	......	20
Port Hood	......	......	......	17	......	21	26	22	......	18	......	18
Antigonish	......	......	......	......	......	......	......	......	25	......	......	......
St. Peters & River Bourgeois	......	......	......	......	......	......	......	......	......	9	......	......

Cubic Feet of Air Per Minute Circulating Through Mines year ending September 30, 1901.

MINE.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.
Caledonia	78200	80075	68200	68700	69890	92864	87900	78900	89900	98900	86900	86210
International	57900	74602	70600	75000	86200	76100	78550	76900	68960	87200	87500	87900
Dominion No. 2............	8750	12900	12000	10000	10500	10000	9800	9700	10200	9000	8300	9000
Reserve	176200	129980	170000	176000	175802	174600	169900	172600	174900	173100	170000	169800
Dominion No. 1	102270	101467	98900	97000	98700	92320	90100	99850	102000	90003	91700	80100
Dominion No. 3	39200	38900	35500	35800	37460	37240	42200	41200	41602	42800	42100	42800
Dominion No. 4	1200	9900	16900	16200	13907	18000	13800	9800	9879	9700	......	......
Sydney Coal Co	6800	8000	6400	6900	6070	6000	6085	6000	5900	6890	7500	6800
Nova Scotia Steel & Coal Co	98200	95870	101090	95775	98970	99700	98000	99233	87515	88900	89790	89220
New Campbellton	20750	25700	......	......	......	21900	20500	22500	30800	......	31300	32301
Gowrie and Block House ..	14000	18000	15500	18900	13200	9220	13500	15390	......	12998	15600	15700
Broad Cove	....	.....	......	10000	......	21900	20500	15500	......	14200	......	14900
Port Hood	. . .	.....	......	12000	......	21960	13500	34300	......	33100	......	34200

Accidents.

Date.	Mine.	Name.	Age.	Occupation.	Remarks.
1900. Oct. 8.	International ..	Alfred Leonard.....	15	Doorkeeper	Killed getting in cage at pit bottom.
Nov. 15.	Caledonia	William Campbell ..	"	"	Arm broken, spragging coal wagon.
Dec. 12.	Dominion No. 4.	John Kennedy	25	Laborer	Three fingers broken; caught between sections of fly wheel in course of construction.
Dec. 21.	Dominion No. 2.	Arthur White......	30	Sinker	Sprained ankle; fell down shaft forty-two feet.
Jan. 2.	" "	John Davidson.....	34	"	Injured by explosion of dynamite at pit head.
"	" "	Howard Harty	22	"	Injured by explosion of dynamite at pit head.
"	" "	Daniel Gillis	29	Engine Driver	Injured by explosion of dynamite at pit head.
Jan. 5.	Dominion No. 1.	Daniel Barrett	25	Loader............	Foot smashed by a piece of coal falling on him in room.
Jan. 21.	Caledonia	James Scott........	60	Miner.............	Leg broken; fall of roof coal drawing pillars.
Feb. 7.	Dominion No. 1.	George Thistle	27	Laborer	Killed by runaway wagon from pit bottom.
March 4.	" "	Murdock McDougald	27	"	Fatally injured on surface between two cars.

Accidents.—(Continued.)

DATE.	MINE.	NAME.	AGE.	OCCUPATION.	REMARKS.
March 15.	International ..	Donald McIntyre ..	60	"	Fatally injured; caught by runaway coal box from bank on surface.
" 25.	N. S. Steel Co..	Daniel Hyde.......	33	Miner	Seriously injured; fell under full trip coming from the deep while trying to steal a ride.
" 26.	Caledonia	Duncan McMillan ..	24	"	Leg broken by piece of stone from roof while drawing pillars.
" 26.	Dominion No. 1.	Edward Gale	24	Laborer	Lost two fingers by piece of coal falling on him from face.
" 27.	" "	Daniel McCormack..	56	Miner	Seriously injured by shot going off while setting fire to squib.
April 2.	Dominion No. 8.	William Hunt......	25	Loader	Arm broken by piece of coal from room face.
April 4.	Dominion No. 1	Geerge Keely	28	Landing Tender....	Hurt about body; caught between coal box and pit prop.
April 11.	" "	Murdock McDonald.	18	Loader...........	Hurt; caught between full box and roof.

COAL . MISCELLANEOUS.

There has been some progress made in the development of the coal sources of Inverness county.

At Port Hood, the Port Hood Coal Mining Company have their ant well under way, and have shipped steadily to the neighboring arkets. At Mabou it is reported a sale has been made to capitalists ho are prepared to sink to win the submarine area at this point, id by Mr. Brown, in his Coal Fields of Cape Breton, to contain a ry large amount of coal. At Broad Cove the Inverness and Richond Collieries and Railway Company has continued the sinking of e slopes. The seam continues regular in dimensions and dip, and e quality is said to continue very satisfactory. The railway from oad Cove to Hastings has been continued to a junction with the tercolonial Railway at Point Tupper, thus securing to the county Inverness uninterrupted connection with the railway system of the ntinent. At Chimney Corner no work has yet been commenced, it it is stated that an English sydicate is expected shortly to take er a large block of areas and to begin development work.

During the summer one of the department Calyx drills was started Hantsport by the Hantsport Development Co. with a view of sting the possible presence of coal seams in that district. Up to the nd of the year no discovery of value had been reported.

In the Musquodoboit Valley the Messrs. Reid and Archibald used ne of the departmental hand drills for several months. The work ne up to the close of the season proved the presence of small seams coal. It is expected that this work will be continued during next ason.

In the Kennetcook district the other Calyx drill put down several oles at Upper Kennetcook. Considerable difficulty was experienced n boring through the soft shales. The presence of seams of coal rom 12 to 30 inches in thickness was reported.

The Diamond drill, after the work at North Sydney was finished, vas loaned to the Intercolonial Coal Company. They have taken it underground to their 1500 feet level, and are boring from that point vith a view of testing the underlying seam in depth.

The direct operations of the drill have been in charge of Messrs. J. . Phinney and J. Power, under the supervision of the department. n the control and management of the five drills in the hands of the lepartment I have been assisted by Mr. D. Weatherbe.

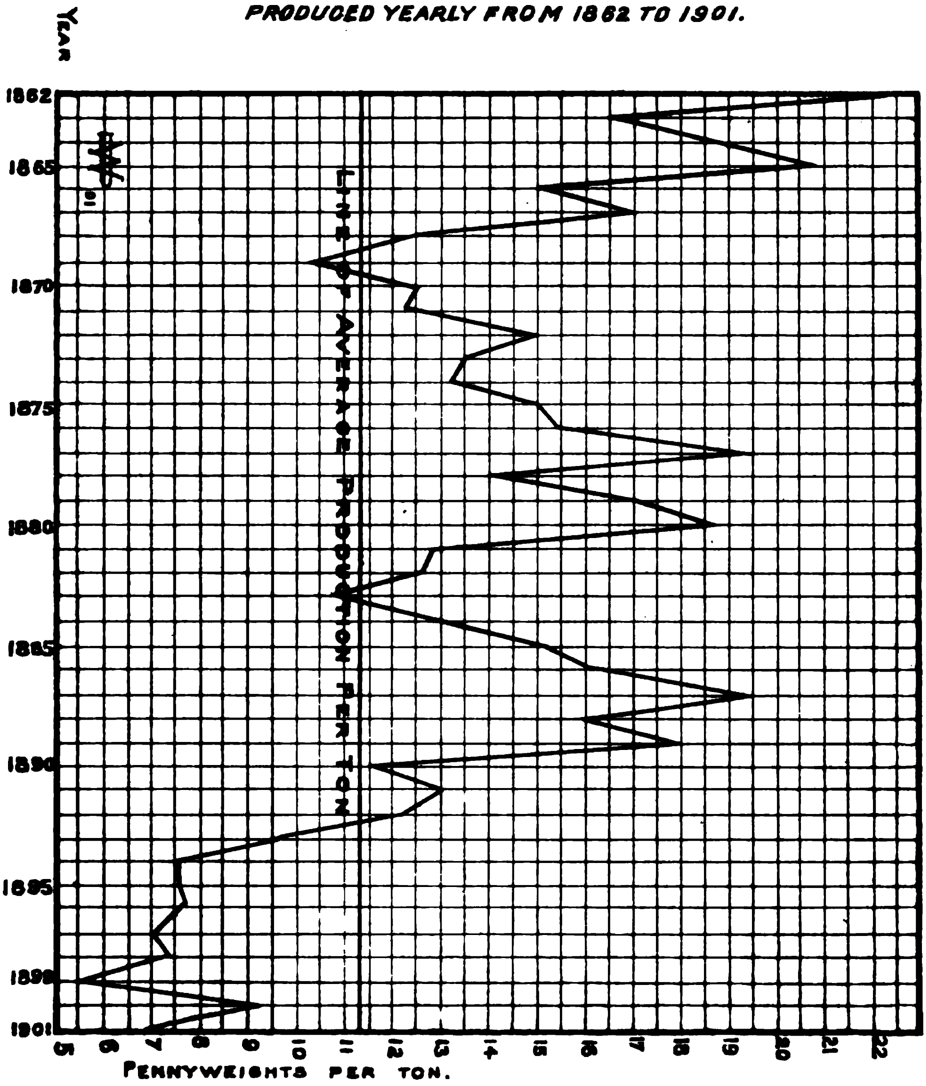
GOLD.

The returns for the year ended September 30th show that 30,537 ounces were extracted, about the same as during the year 1900. The output was to some extent hindered by the unusual dryness of the summer months. I have, in previous reports, referred to the unsatisfactory way in which returns have been made from the mills. It is now decided that in future the penalties provided by the Act will be enforced against those failing to comply with the requirements.

I append a detached report from Mr. Weatherbe of the operations in the mining districts, and further details will be found in the tables at the end of the report.

The accompanying graphic chart shows the increased attention given to the mining and milling of comparatively lower grade ores, viz:

TABLE SHOWING Nº OF DWTS. PER TON PRODUCED YEARLY FROM 1862 TO 1901.



REPORT ON THE GOLD MINES OF THE PROVINCE.

FROM SEPTEMBER, 1900, TO SEPTEMBER, 1901.

TO DR. E. GILPIN, JR.,
Deputy Commissioner and Chief Inspector:—

SIR,—I beg to submit for your approval the following report on the Gold Mines for the past season, in which I have endeavored to describe the methods employed, and the progress and improvements noted since the last official visit.

Prominent among these is the new Cyanide plant at Caribou, the object of which was to treat the old tailing beds of the districts. The success or otherwise of this scheme will no doubt be observed with interest by the miners of the Province.

A distinct hardship was occasioned throughout most of the various districts by the exceptionally dry summer, and this was felt more particularly by the mill men, who in several instances had to shut down for several weeks at a time. Rapid strides have been made during the past few years in the mill practice through the Province, and the methods and appliances now used, particularly in some of the larger plants, will compare equally with those employed elsewhere throughout the mining world. The benefits derived from the labors of Mr. Faribault, of the Canadian Geological Survey, become more marked each year, and the maps of this department may be found in the hands of the miners in nearly every district.

HALIFAX COUNTY.

WAVERLEY.

The Waverley Gold Mining Co. J. G. McNulty, Manager; J. C. Puttner, Underground Foreman; and 160 men on the pay list.

During the past year work has progressed in this mine at a rapid rate, and strict attention has been paid to the extending of the ore reserves which now form a comparatively large body.

The main shaft dipping north-westerly at 52° has now reached a depth of nearly 500 feet, and sinking is still in progress. The various levels have been extended to the following distances from this shaft :—

No. 1 North-East 500 feet, and South-East 545 feet.

No. 2 " 380 " " " 640 "

No. 3 " 130 " " " 320 "

No. 4 " " " 240 "

At a depth of 470 feet level No. 5 has been commenced to the South-East.

A shaft termed "North No. 2" intersects No. 1 level at a point 350 feet from the main shaft, and has been sunk to a depth of 80 feet below the level. At a height of 100 feet above the level in this shaft an intermediate level has been driven easterly 80 feet and south-westerly sixty feet, and small blocks taken out above the first portion, and below the second. This shaft dips at an angle of 65° to the north. About 530 feet farther east on this north leg of the vein, a pit called the "Cameron Shaft" is being sunk, though it has as yet only reached a depth of 18 feet, and 600 feet from the main shaft on the south leg; another shaft called "South No. 2" is down 125 feet, with a dip to the south-east of 45°. This is to be sunk until connection has been made with the extensions of the levels in the main workings, thus providing an additional air and travelling way, as well as testing the values and continuity of the ore.

In my last report on this mine, I mentioned a dislocation as occurring at 220 feet north east of main shaft in No. 2 level. This proved on exploitation to be merely a pinch in the vein; but though the seam could be followed, it is only at the present heading 160 feet from the break that the ore appears to be increasing again in size, and it now measures about 3 inches in thickness.

The working belt in this mine is composed of slate between "whin" walls and measures from 7 feet to 8 feet across. In August last an attempt was made to economise in the cost per ton of mining by only extracting about half of this belt, the remainder, a hulk of 3 feet to 4 feet being left on the hanging wall.

This rock, though in itself of a fairly compact nature, is apparently not supported firmly, a distinct "parting" often occurring between it and the "whin" wall. Several heavy falls have already taken place, and though the stopes are kept filled with black rock as close to the working places as is practicable, little timber is used, and altogether it does not appear to be safe for those working underneath, especially as in the stopes where this is the practice the rock is lying at a fairly flat angle.

Indeed it is a question whether, (if possible at all,) the placing of extra timber necessary to make this secure, would not be more expensive than the previous practice of taking down the whole belt, and leaving the valueless rock on the scaffolds.

However, I was informed that the system is to be discarded and the latter method adoped as formerly.

The above method might be successfully applied on the south leg of the fold, in level No. 2, where the vein suddenly jumps from the foot to the hanging wall, and the rock left in the belt would be supported, to a great extent at least, by the solid footwall underneath even where the rock dips at a steep angle.

During the past year upwards of 1700 feet of driving and sinking have been accomplished as well as a considerable amount of stoping; enough ore, in fact, having been extracted to supply 20 to 30 of the 60 stamps in the mill.

Two of the four Wilfley tables have also been kept going. No additions or changes of any importance have taken place with regard to the plant which has been fully described in previous reports.

W. Temple—W. Temple, operating on some areas adjoining the above company, has sunk and cribbed a vertical shaft to a depth of 165 feet.

At 145 feet the main belt was intersected, and has now been passed through, and when a little greater depth has been reached, a cross cut will be made south, about 20 feet to the vein, when driving and stoping are to be commenced. A small boiler and engine supply power for the hoist and a sergeant steam drill is used in sinking.

S. Smith—A 100 ton Cyanide plant was erected during the year by a Mr. Sydney Smith from the United States. After treating about 2000 tons of tailings, the plant was shut down, not enough gold being extracted to make it pay.

COW BAY.

Evangeline Gold Mining Co. L. Holland, General Manager; Frank Tinney, Foreman, and 15 men.

This Company has recently been reorganized, and the property now stands in the name of J. A. Link, et al.

The new management have been at work in the mine for about seven weeks, and the workings at present appear in the following shape: The vein averages probably about 12 inches of quartz in a 4½ working belt of whin, and its strike is approximately north and south, with a vertically inclined dip. The strike of the measures here is about east and west with a uniform dip to the south of 30°.

Two shafts 90 feet apart are sunk on the vein, the north one to a depth of 150 feet, and the south shaft to 145 feet.

At 78 feet from surface in the north shaft a tunnel has been driven north 47 feet to a 10 foot belt of hard slate, where the vein apparently turns to the west, and decreases in size.

This slate band being conformable with the strata, cuts both shafts in its dip to the south.

All the ore has been worked out between the two shafts and to a distance of a few feet south of the south shaft in which at a depth of 45 feet from surface, a tunnel was driven south for 50 feet, where it encountered the main slate belt of the district. This body extends from here to the salt water, probably a mile to the south.

Immediately underlying this slate belt, and on the dip of the rock, is supposed to lie the main pay streak of the mine, which is said to be about 35 feet in height.

At the bottom level a tunnel on the vein now in course of progress, has reached a point 30 feet south of the south shaft, and is to be extended to prove this zone of rich ore. Hand tools are in use at present; but if the mine proves workable these will be superseded by machines, which as the rock is being broken across the strata, will be of great advantage. The working belt which as mentioned above, is 4½ feet in width, might profitably be reduced, as no "true wall" is apparent on either side.

A Cameron pump lifts the water from the bottom to a Northey pump in the north shaft, which in turn discharges at surface.

The boiler supplying these, also supplies the hoisting engine.

The 5 stamp water power mill on the Cow Bay River to the eastward has not been used under the present management.

LAKE CATCHA.

The Lake Catcha Consolidated Gold Mining Co.—Mark Anthony is manager of the property, and 35 men are at work below and on the surface. The labors of this company up to the present time appear to have been chiefly devoted to prospecting and testing operations from which a good outlook is presented.

The chief work has been conducted on the "Anthony" lead, (named after the manager) situated 50 feet north of the supposed position of the anticlinal. The vein consists of about 2 inches of quartz in a 38 inch slate belt. part of the accompanying slate being also milled. Three shafts have been sunk on the dip (about 80° to the north) as follows: No 1, the most westerly is 60 feet deep; No. 2 is 40 feet east of No 1, and is 160 feet deep; and No. 3, east of No. 2 by 60 feet, is over 100 feet in depth.

Most of the vein between shafts 2 and 3 and to a distance of 120 feet west of No. 1 and 100 feet east of No. 3 has been worked out by underhand stoping.

Connection has also been made by stoping from the bottom of No. 2 up to the workings west of shaft No 1. The greater portion of the ore is still in position between shafts Nos. 1 and 2.

The measures appear to make the "west turn" of the anticlinal about 300 feet west of shaft No. 2, and at this point a shaft is being sunk through the surface to locate a belt of quartz 6 feet in thickness which has been cut further north, and which from the drift would appear to be of good quality. The surface earth and gravel in this locality ranges from 12 to 25 feet in thickness, which adds to the difficulty of prospecting.

About 50 feet north of the Anthony lead, and 75 feet east of the mill, an old shaft on the "Sheba" lead is being pumped out preparatory to making tests of the ore which is said to measure some 5 inches in thickness.

The mill is an old one, and has been moved to its present position during the past year. It contains 10 stamps, a 40 horse power boiler, and a 30 horse power engine, which latter runs the stamps, hoist and pump.

John H. Anderson.—Only a small amount of work is at present being done on this property. W. Dukeshire, as foreman, and six men are employed, and are sinking a shaft, (already 60 feet deep) on the "Sheba" lead just south of the mill. The strata at this point has been moved by a heavy slip some 100 feet to the south. The fault probably lies between this shaft and the property of the above company.

The vein in this shaft only measures 1 inch in thickness, and when a depth of 70 feet is reached a cross cut will be driven south to intersect a 4 inch lead that was worked some years ago. Across the road to the north of the mill an old shaft is being opened up to test another lead.

The mill contains 10 stamps, a boiler and 30 horse power Leonard engine, which latter runs hoisting gear.

The Oxford Gold Minínq Co. G. E. Francklyn is in charge, and has a few men engaged in prospecting.

CLAM HARBOR.

Little practical attention has ever been paid to this district by the mining or investing public; but the quiet and diligent prospecting efforts of P. Dunbrack and others during the past few years have now been rewarded, and a remarkable *exposè* of the district's structure is exhibited, and will prove well worth while examining by the student of the formation of the Nova Scotia Gold Measures.

As may be seen by reference to the Geological Survey Map of this locality, the district is situated on a local fold of the north leg of the main Tangier and Harrigan Cove Anticlinal.

At the extreme end of operations, at area 580 and vicinity, a corrugated vein measuring about six inches in thickness, has been traced by a complete surface opening, from the north dip round the eastern bend of the fold to the south dip—a distance of some 200 feet in all, and a person standing on the apex can with the eye follow this lead directly round the turn.

The axis has a decided pitch to the eastward, and the dip of the rock is naturally flattish on top.

At area 577 a vein, probably inside the above, producing about 5 inches of quartz, has been opened to a depth of 15 feet on the north dip, and for a distance of several hundred feet westerly by pits until it appears to turn to the south.

Some distance west of the road, probably at area 471, a vein has been opened directly on the western end of the dome, and at short distances to the east or inside of it, two other veins have been cut, and another was opened about 50 feet to the west, also on the "turn."

A peculiarity regarding these 4 veins lies in the fact that though ng on the western end of the dome, they all dip to the east, and have thus probably been "overturned." Several other leads to the south have been traced for considerable distances, and trend northward as they are followed east.

One of these, the "Dunbrack" lead, has been opened for about 700 feet, and in common with most of the veins in the district the quartz has a corrugated or barrel formation, shows free gold and is well mineralized.

TANGIER.

The Worcester-Tangier Gold Mining Co.—Arch. McPhail is manager, and thirty men are employed. A shaft is down on the "Little South" lead to 160 feet. At this point cross cuts have been driven north 50 feet to a vein, and south 70 feet to a shaft on the Nugget lead, which from here has been drifted on east 140 feet and west 130 feet. Above the east level the ore has been worked out in a rectangular block to within 40 or 50 feet of the surface, and to a distance of 100 feet east of the stope.

West of the shaft the ore has been worked back by overhand stoping from the end of drift to a point 40 feet from surface in the shaft.

From the shaft bottom another cross cut has been driven south 35 feet to the workings on the "Murphy Twin" belt. These workings are now 215 feet in depth, and connection has been made with the end of this cross cut by a level driven 90 feet east of the east shaft. The west shaft, 100 feet from the first, is at an equal depth, and the ground has all been worked out between the shafts and to a distance of 40 feet east of the east one. Two small parallel cross sectional faults occur in the workings and dip to the east at about 75°. One intersects the east shaft near the surface, and the other lies about 100 feet to the west. The dislocation caused by these only amounts to some few feet in each case, and the movement of the hanging wall is from north to south when observed from the east.

Some 14500 superficial feet of work, including driving, sinking, and stoping has been done on the veins in above workings since the last inspection.

The power for the hoist and two cornish pumps, which though in different shafts are connected by driving rods, is supplied by a 50 horse power boiler and 30 horse power engine.

The mill, which consists of 20 stamps, is operated by water power, but also contains an auxiliary steam plant, including a 60 horse power boiler and 40 horse power engine.

Water not being available during the past few months, this plant was utilised until within a few weeks of present date when the mill shut down. Only 10 stamps have been operated as the plates, for the remaining 10 were removed from the mill some time ago.

The mill building also contains ore bins of 50 tons capacity, rock breaker, automatic feed, and one Wilfley concentrator, which latter has not been used for over a year.

I was informed that water power could be employed all the year, if the dam was raised to a height of 6 feet. The head at present, (about 20 feet) is sufficient, if a larger reservoir were available.

MOOSELAND.

***The Arlington Gold Mining & Milling Co., Ltd.* This company, though idle at present, has during the year completed their mill, which contains 5 stamps, an ore bin, automatic feed, and foundations for five more stamps. A large, new boiler and engine are also installed in this building, and will operate battery, hoist and pump.**

The shaft on the "Cummings" lead, some 5 inches to 8 inches in thickness, has been sunk to 100 feet, and is in good order. J. Reynolds is acting as Manager and Agent on the ground.

MOOSE RIVER.

The Touquoy Gold Mining Co. This Company and the Colonial Mining Company, whose workings are now connected, are being operated by the same staff, consisting of R. Kaulback, Manager; Ed. Jennings, Foreman, and 14 men.

The Touquoy shaft has been sunk on a dip of 60° to 60 feet, at which depth it intersects a large slate fissure belt containing two quartz veins, and measuring about 12 feet or more in thickness. This ore takes the form of a shoot 40 feet in height and pitching to the westward at a medium angle. From this point the shaft turns south and west following the fissure to a total depth from surface of 160 feet. At 45 feet in this shaft a tunnel was driven north across the strata for 100 feet, and intersected several small veins, none of which however, appeared to carry values sufficiently high to warrant working.

At the foot of this shaft another cross-cut is being driven to cut the "New" lead 5 inches in thickness, and lying 27 feet from the "Britannia," on which this shaft was first sunk. This cut is now in about 15 feet, and when the desired point is reached an upraise will be made to connect with the workings on the adjoining Colonial Company's property.

Colonial Mining Co. At a distance of 46 feet east of the Touquoy shaft on the above mentioned fissure belt, (which has been worked out to the surface) this Company's shaft has been sunk to a depth of 35 feet, at which place a cross-cut has been driven south 40 feet, and is to be extended to cut the " Britannia " lead.

At 27 feet from the shaft in this tunnel the "New" lead was tapped, and is now being drifted on, the operations at present consisting of a drift 15 feet east and a drift and small stope 30 feet to the west.

In this latter place a machine drill is at work driving, and the point will soon be reached at which the upraise from the Touquoy workings mentioned above, will connect. In the cross-cut from the shaft to these workings several small unproved veins were cut. Some specimens I was shown from this " New " lead, or No. 3, as it is also called, showed exceptionally fine coarse gold.

It is the intention, I believe, if everything proves as favorable as at present appears, to sink a vertical shaft to the westward so that all the leads may be operated from it.

A single track tramway has recently been completed from the deck-head of the Touquoy shaft to the mill. This will probably be changed to a double track gravity road with large 1 ton ore cars.

The mill is of 15 stamps with two Frue Vanners, and is operated by the water power supplied by Moose River. It has been idle since July owing to low water.

The plant also includes a 40 horse power boiler and small hoisting engine, a 4 drill air compressor, and a No. 7 Cameron Vertical Sinking Pump with a capacity of 100 gallons.

Mining and milling is said to cost here about $2.00 per ton.

The Baltimore and Nova Scotia Mining Co.—L. W. Getchell, manager, W. J. Prisk, superintendent, and 50 men emyloyed.

This new company, understood to be well capitalized, having recently purchased the property from the Guffy-Jennings Co., are actively prosecuting the work so well begun by the latter company.

The main vertical shaft, 14 feet by 4½ feet, inside timbers, has now reached a depth of over 560 feet, and is to be further sunk until a depth of 1000 feet is reached, when it is estimated that a cross cut north of 125 will be necessary to tap the belt, as the shaft-collar is situated at this distance from the out crop, and the vein was intersected at 500 feet. This shaft is only partly fitted with a ladder-way, and the men travel in the tub and on the incline.

At 400 feet No. 1 level has been driven west 200 feet and east 300 feet, and at a distance of 130 feet east of shaft the incline by which the mine was originally worked meets this level. This incline was supposed to follow the pitch of the best ore, and was driven on the belt from a shaft 130 feet deep and at a distance of about 600 feet east of the main vertical shaft.

No. 2 or the 500 foot level is in west 600 feet and east 500 feet.

At about 400 feet west of shaft in No. 2 level the belt pinches out, and at the heading cross cuts have been driven north 20 feet and south 40 feet to pick up the vein; but up to date this work has been unsuccessful.

Cross cuts have also been driven north for prospecting purposes at the shaft, and at the east head of this level. In each case these are in 100 feet.

Most of the ground between Nos. 1 and 2 level is stoped out west of the shaft, and a block 130 feet long has been worked away under No 2 level to the west. A roof of 18 feet was left here between stope and level, and it was in the east end of this working place that a few weeks ago Thomas Monk was killed by a fall of part of the pillar.

About 700 feet to the south of the main belt on the surface a wide slate belt containing a large percentage of quartz has been opened by trial pits and proved for several hundred feet east and west. The company have 4 Rand and 1 Sullivan air drill, and those used are supplied by a 4 drill Ingersoll Compressor, set up in the engine house near the shaft. This machine will be enlarged to accommodate 10 drills when mining begins in earnest.

A new 40 stamp mill is in course of erection over the shaft, and is to have 20 stamps on each side, back to back.

The old 10 stamp mill is still on the property, though not in use at the time of my visit, and will probably be dismantled when the new plant is ready.

If the present Cyanide plant in the district proves a success, a duplicate plant will be installed here, and the tailings cyanided direct from the plates without previous concentration.

Cyanide Plant. This plant, which has a capacity of 100 tons, was erected by J. R. Stuyvesant, the owner, during the spring of the present year, and having been recently completed, has only been running for a short time.

H. S. Badger is Manager, and O. Collings has charge of the laboratory. Twelve men are employed in and about the plant, which consists of the following apparatus:

Parts. Two solution tanks, one for week (.10%), and one for strong, (.25%) solutions.

Leaching Vats 25 feet in diameter by 4 feet high. These,—4 in number,—are made of wood with a false, perforated bottom, covered by a filter bed of 8 oz. duck and cocoa matting, and an innovation in their construction is the introduction of finely perforated pipes on the bottom supplied by an air blast which renders leaching more rapid with slimy ores.

Two settling tanks, each with double compartments connected by an opening below.

The precipitating boxes placed in long rows and containing zinc filings.

A large receiving tank.

Method of Procedure. The auriferous sand or "stock" is taken from the old tailing beds by horse scoops and dropped into cars which are raised by rope haulage to the top of a high trestle and dropped into hoppers and shoots which supply the 4 vats. While these are being filled the sand is kept stirred by a man to keep it from packing. As the ores from which these tailings were produced are rendered more or less acid by the decomposed pyrites, lime is introduced as an alterative alkali. When full of stock the strong solution is added until it stands 3″ above the sands, and this level is maintained throughout the process, the stopcock being closed to allow contact with the solution, which often stands over 12 hours before being drawn off. This is replaced by the week solution, and finally water is added to drain off the remaining cyanide contained in the sands. Iron pipes communicate with the spaces below the false bottoms and convey the now auriferous liquid to the settling tanks, where the scum is removed. The solution, though attacking brass or bronze does not affect wood or iron. From here it flows into the zinc boxes and the gold is precipitated. The precipitation is effected by shavings of zinc placed in wooden troughs—the "zinc boxes." They are divided into compartments by partitions which cause the solution to flow alternately upward and downwards. Each alternate compartment is empty in order that in passing through the shavings, the solution may invariably flow upward. By downward flow the gold slimes would collect on the upper surface of the zinc, and thus impede further flow, but by upward flow these are precipitated on the under side of the zinc, from which they continually drop off, and permit free passage of the solution.

The exhausted solution flows from here to a sump tank from which it is pumped to the original storage tanks, and brought up to strength.

From the operations of this plant from July to September, inclusive, 4,145 tons yielded $5754.00.

I was informed that the cost of treatment here was a little over 60 cents per ton, though this would probably largely depend on the position of the beds from which the tailings were taken. A reduction would be effected by taking fresh tailings direct from the plates.

FIFTEEN MILE STREAM.

The Egerton Syndicate.—This company, successors to the New Egerton Mining Company, who stopped operations in 1899, commenced active work in March, 1901, and under the management of W. Borlace, are sinking a new vertical shaft. L. McLean is foreman, and 47 men are employed.

The shaft, 13 feet by 6 feet in cross section inside timbers, is divided into three compartments—hoisting, pumping, and ladderway, and cages are to be used in the former.

Squared timber, 8 inches by 9 inches, is used, and the setts are placed four feet apart with the ends of the cross pieces hitched in the rock. The shaft is situated a short distance north of two large belts, the "Harvey" and "Mother Seigel," each 12 feet in thickness, 16 feet apart and dipping at about 30° to the north.

The depth reached at the time of my visit was 147 feet, and the hanging wall of the "Harvey" belt had already been penetrated and showed gold. Two other small veins had also been cut overlying the "Harvey."

Two No. 3 Rand air drills are employed in sinking, the compressor supplying these being situated in the mill building. A steam pump is used for unwatering.

The timbering, ladderways and platforms are all of the best material and in good condition.

The present boiler and engine used in hoisting are of insufficient wer, and have just been replaced by a new 60 horse power boiler, ne, drums and hoisting gear. The old Ledgerwood cableway is to be abandoned and a tramway from shaft to mill is in course of construction.

Neither the Egerton steam mill of 30 stamps nor the Stanley 20 stamp water mill have been used for crushing since January, 1899. Besides the air compressor, the mill building contains two boilers, one of 100 horse power, and the other of 35 horse power, a mill engine and an electric light dynamo.

HARRIGAN COVE.

The St. Anthony Gold Mining Co.—The St. Anthony Gold Mining Co., as at present organized, has been operating on the St. Anthony lead for the past year, and from March, 1901, to August, 1901, inclusive, 1281 tons yielded 1289 ozs. of gold, or nearly $20.00 per ton. H. Sanders is in charge, with Angus McDonnell as foreman, and about 50 men on the pay roll.

The vein has kept an average thickness up to the present time of about 8 inches, though in both the east and west faces of the workings it now shows much smaller. It is expected that this decrease in size is only local, at least in the western end, as at several other points in the district, the vein has been proved to be widening.

The rock dips at 55° to the south and four inclined shafts have been driven on the lead.

No. 1, the most westerly of these is 113 feet deep, and the ore has been worked out for 35 feet west of the shaft, and to a height of 50 feet from bottom. At this west face a vertically inclined cross-sectional fault is encountered, and a tunnel has been driven west for 50 feet at a height of 40 feet from the bottom.

No. 2, or the. "Pump" shaft, so called, is 120 feet east of No. 1, and 170 feet deep.

No. 3, or the "Main" shaft is 146 feet east of No. 2, and has reached a depth of 190 feet.

All the ore between shafts Nos. 1 and 2, and between No 2, and to a depth of 110 feet in No. 3 has been worked out, as has also, with the exception of a bluff 40 feet long, and 25 feet high, the ground between the 110 feet level in No. 3 and No. 4 shaft, which is situated 124 feet to the east of No. 3.

No. 4 (the east shaft) is 60 feet deep, and a block 30 feet high and 40 feet long has been worked out east of it, and a tunnel driven 35 feet at a height of 10 feet from bottom level.

I found the ventilation, ladderways and methods employed at this mine to be in accordance with the Mines Regulation Act, and though the timber in the old workings between the main and east shafts was in a very bad state, it is being replaced by new and sound stulls.

Hoisting is effected in No 4 shaft by a "whim," and in the main shaft a self dumping skip is hoisted directly to the top of the mill building, which contains 10 stamps and a Wilfley concentrator, ore bins, rock breaker and automatic feed. A 90 H. P. boiler and 60 H. P. mill and hoisting engine are also installed here. This boiler supplies steam as well for two pumps in the mine.

Difficulty was experienced during the summer in securing a sufficient water supply, that which was used being obtained from a swamp, and used over twice. However, rights have been acquired over a lake about one-half a mile to the north east, and a supply pipe and pump will probably be put in here. The mill, office and other buildings about the property present a neat and business-like appearance. A new coal shed is in course of construction.

Kent Archibald's.—This property, situated about 1200 feet to the west of the St. Anthony mine, is assumed to be on the same range of strata, and probably on the same lode. M. Archibald, with 18 men, are operating the mine, the vein in which measures about 12 inches in thickness.

A shaft has been sunk 100 feet, and the ore from small underhand stopes at bottom, 60 feet east and 50 feet west, has been extracted.

A five stamp mill has recently been built, and a small boiler and engine gives the necessary power required. The "water" question is also giving trouble here, pit water being used in boiler and mill.

Bluenose Gold Mining Co.—At the time of my visit, the manager, Mr. A. G. McNaughton, was absent, and Mr. G. F. McNaughton was temporarily in charge. Stephen Monk is foreman, and about fifty men are employed in double shift.

The main or west shaft on the Springfield belt is about 500 feet deep, and is sunk on the vein, the dip of which is about 87° to the north.

From the end of and below the 100 foot level, 400 feet west of shaft, the belt has been worked out to a point 90 feet from shaft at the 460 foot level.

In these workings a cross cut at the 120 foot level and 126 west of shaft has been driven 39 feet to the "South Belt," and another at the 200 foot level, and 215 feet west of shaft is in south a few feet.

From the head of the 39 foot cross cut an upraise has been made to a level driven from a shaft on the "South Belt." This upraise is 50

The ground between the two shafts, 100 feet in length, has all been extracted below the 100 foot level, and a block has been taken out by the underhand system from the bottom of the east shaft, 425 feet in depth, to a distance of 275 feet east to the 100 foot level.

At a depth of 50 feet and 25 feet east of this shaft another cross tunnel has been driven 39 feet to the "South Belt," the workings on which, at present open, consist of a shaft 70 feet deep and a level driven west at this depth for 250 feet, at which point the upraise mentioned above taps it.

The underhand method continues to be the system of mining employed here, in which operations, including the driving and sinking four machine drills are used, (4 Rand and 1 Sullivan.) At the deck-head of the main shaft a 40 ton ore bin and a large size Gates rock-breaker are in position. From here the sized ore is carried by a skip up an incline to the mill ore-bins, which are of 125 tons capacity. The number of stamps has been increased from 20 to 30, and preparations are nearly complete for the installation of two Wilfley tables.

Two boilers of 80 H. P. and a 100 H. P. supply the engines of 40 and 30 H. P. respectively, which drive the mill, pumps, hoist and rock breaker.

The mill boiler uses water from a reservoir near the building which is supplied by a brook and swamp. This water is condensed and from the condenser is used over again by a novel scheme. It is fed through short, vertical iron pipes, with perforated horizontal branches each way at the bottom, and thus a rotary motion similar to the common spraying fountain is produced. Several of these devices attached to the exhaust pipe from the condenser are placed on top of a series of longitudinal gratings at intervals of a few inches, and alternately at right angles to each other, the whole measuring about 15 feet in height. The water flowing through these is thoroughly cooled and collected again in a tank, from which it is again used. Indeed I was informed that the same water had been used in this way for upwards of two years, little loss being sustained in the process. This mine is apparently being operated upon a most economic system, and probably with as proportionately low an expense sheet as is possible; great care being paid to details.

Royal Oak Mining Co. This company, which according to its prospectus, is capitalized at $1,000,000 controls the old Gladstone property. W. J. McIntosh is General Manager, and with Gardener McKenzie as Foreman, has 20 men employed.

The main shaft on the "Big Lead," so called, was continued last year until a total depth of 450 feet was reached, and at the time of my visit it had been unwatered, and the pumps were being put in order

At the present time a steam pump lifting to within 200 feet of surface from which point a Cornish pump discharges to surface.

When pumped out, the steam pump will be replaced by another of the Cornish pattern.

At 37 feet to the north, a shaft on the Gladstone belt is being kept unwatered to a depth of 40 feet from surface, this serving to keep the surface water out of the main shaft. The operations on the "Big Lead" were extended since the last inspection, until the following underground appearance is show:—

At 425 feet the levels are now in west 117 feet and east 78 feet, and the cross-cuts here were continued south to a distance of 37 feet, and north to 111 feet, cutting the McKenzie lead in the former and the "Gladstone" and "McClure" belts in the latter.

Drifting was done on the "McKenzie" for 25 feet each way from head of south cross-cut.

Ore was extracted by the overhand method on the "Big Lead" from the end of the west drift to a point in the shaft 300 feet from the deck.

A small amount of underhand stoping was also done at this shaft between the sump and these levels.

Good ore was encountered in the shaft at 275 feet, and the pitch of the rich streak in this belt is supposed to be about 36° westerly. It is the intention therefore to drift on this shoot of ore.

The chief work, however, at the time of my visit consisted in exploiting the ground on the "Gladstone Belt," some 700 feet west of the above shaft. The belt at this point produces about 2 feet of milling ore—slate and quartz.

An old shaft, situated here and 130 feet in depth, has been pumped out to within 60 feet of the surface, and at 40 feet a drift is being run west to cut a pay-streak and to connect with a shaft 100 feet further west, which is just being sunk and is now down 150 feet. A level has been commenced west, and is to be continued for 200 feet, in which distance it is expected to intersect another pay-streak, where, if the ore proves satisfactory, a main deep shaft will be sunk. The pay-streaks in this vicinity appear to all pitch westward at 36° while the rock dips to the northward at about 43°.

Hoisting is done in the first mentioned of these two shafts by a small engine, and at the latter by a "whip." The mill, a new one, is
installed v up to date plant, and contains 10 stamps,
o omatic feed and a Wilfley concentra-
d large engine.

New Glasgow Property.—George Hirschfield and several men are tributing on this property and are sinking on the Meridian lead to the south.

WINE HARBOR.

The Plough Lead Mining Co.—J. S. Lowe, general manager, M. McGrath, superintendent, and 35 men. The company is working at two points in the district.

On the "Plough Lead" two shafts have been sunk. In the west shaft, which is 190 feet deep, a level driven west at 50 feet in the shaft has encountered the large main fault which crosses the rock in a north and south direction and dipping east passes through the shaft at 180 feet. West of this fault the continuations of the measures lie about 80 feet to the south, Another fault intersects the first in the level. The strike of this has a south-easterly course, and thus a triangular "jib" lies between the two, and in this ground the rock is much broken and shaky.

It was in the western end of this bad ground that the old open cut workings had been driven when the ore was lost several years ago. A cross-cut was made from the shaft at this 50 foot level for 60 feet in a south-west direction, and from a point in it, 30 feet from the head, an offset was driven north-west to the "Westcasset" vein, which though in reality underlying the "Plough" lead, is here found south of the portion being worked, having been moved there by the heavy "shove" just mentioned.

This west shaft is sunk on a small hanging wall vein and at the surface does not cut the main belt, which here takes the form of a large "chimney," 60 feet to 70 feet in height, 20 feet or more in thickness, and containing perhaps about 60% of milling stuff. This pitches to the east at an angle of about 18° and also to the south. It has been followed east for 180 feet, and the face at this point lies 40 feet west of the east shaft, a new one, which is sunk on the footwall, and has reached a depth of 90 feet. This will be deepened to catch the pitch of the ore, and a pillar is to be left between the roof of the present workings and the west side of the shaft. Two blocks of stoping have been carried for 60 feet west of the west shaft. The method of timbering used is that usually adopted in our gold mines (stull and scaffold) though necessarily on a larger scale than is generally the custom. The cross-stulls in places measure 25 feet in length. No props are used, as little rock is placed on the scaffolds and the ressure is chiefly lateral. The shafts on this belt dip at 87° south.

has also opened a shaft on the "Eureka" lead nearly
s vein measures four to five inches in thick-
n a "whin" working belt of about 36 inches.

This shaft is 30 feet deep and dips like the above at 87° to the south. One lift of 40 feet has been taken out at the bottom level. Operations are conducted by means of a "whim." The mill is situated at the "Plough" lead works, and contains 15 stamps, weighing about 800 pounds each. A 40 H. P. engine is used for hoist and pump and a larger one for the mill. The boiler is of about 30 H. P. capacity.

W. L. Pratt, a Boston capitalist, is operating at three separate points on what was originally known as the "Old Provincial" property.

Between 600 and 700 feet east of the "Plough Lead" works a shaft is being sunk on the south dip to tap the ore body being worked by the above company, which as already mentioned is pitching to the east. This shaft, 13 feet by 4 feet inside timbers, is down 30 feet, and it will probably be necessary to reach a depth of over 200 feet before the ore is reached. One steam drill was used in this sinking. A little further east and to the south of this shaft the old workings on the Caledonia belt have been partially reopened.

A shaft on this vein, some 200 feet deep, has been cleaned out for a depth of 70 feet and connection made with another shaft over 100 feet to the eastward, and on the same belt, west of the first mentioned shaft, the ground had all been stoped out some years ago, and between the two shafts and east of the east shaft it had also been worked away for 75 feet.

A level was driven at 180 feet in the shaft and had reached a point 75 feet east, and the new work done by the present management consists in stoping from the shaft bottom to the head of this level, and a winding cross tunnel driven diagonally across the measures in a southeasterly direction for 170 feet. This tunnel was driven from the end of the level, and has as yet cut no valuable ore. No further driving on the main belt was done to prove its continuation.

The mill, which is situated over this east shaft, contains a 5 stamp battery, which is shortly to be enlarged to 10 stamps. These stamps weigh 950 lbs. Water for the battery is obtained from a brook and swamp, except in very dry weather, when salt water was used. The swamp water also supplied the boiler, which is 60 H. P. and drives mill engine, hoist and pump. North of the road and near the school house a shaft, sunk by means of a "whim," is down 50 feet, and crosscuts have been driven north 15 feet to intersect the "Hattie & Mitchell" lead, worked some years ago to the west, and south 30 feet on a prospect.

work has not yet reached the desired point, while in
a small vein was found 15 feet from the shaft.

Mr. Conroy is acting as manager with R. McDonald as foreman. and 23 men employed. Mr. Weston is also on the ground in Mr, Pratt's interest.

ISAAC'S HARBOR.

The Richardson Gold Mining Co., Limited.—This large and what may well be called representative producer has passed through several misfortunes in the shape of "crushers" during the past two years, and though a large part of the old upper workings on the south leg of the anticlinal were lost, the mine is now on a most systematic basis for development. Pillars are being left over the levels, and heavy and close timbering is resorted to, this latter being carried as close to the working places as the firing will allow.

The main shaft has reached a depth of 620 feet, measured on the incline, which is on an angle of 22° to 25° for 100 feet, and from there at about 35° to the bottom.

A drift from the 500 foot level is in on the south leg for about 700 feet and thickly covered with timber to within 160 feet of the head, from which point a solid rock cover is left between it and the old crushed upper workings. This pillar measures about 70 feet in height.

At 530 feet from shaft in this level a mill hole is down to the face of the underhand stopes being carried from the shaft.bottom up to the level, and between the level and this working, two pillars, some 40 feet long by 30 feet high, have been left. Though the roof is apparently secure at present, in order to prevent a spread of the crush by which the main shaft might be lost, I recommended that false pillars be placed along the upper side of shaft. Rock filled cribs or chocks would be a cheap means of effecting this, though perhaps solid masonry, cement or concrete, would be a better and more lasting method. The north shaft has reached a depth on the incline of 240 feet, but on account of its steepness of dip, which increases from 65° to 80°, the bottom is only some 50 feet above the level of the bottom of the main east shaft, and about 350 feet from it, measured round the bend, which here appears to be more gradual than the fold formed by the south leg. Underhand stoping has been carried up from the shafts to a point between them, from which point the ore is sent in opposite directions to the skips in the respective shafts.

The level driven from the bottom of the north shaft northwesterly has now reached a distance of 220 feet, and from its head a vertical bluff to the surface marks the limit of the work in this direction. As stated above, besides the heavy timber put in there, regular pillars have been left all the way round above the level from the main shaft to this face, and this system, the underground manager informed me, was to be rigidly adhered to in the future workings of the mine.

Two Rand air machines are used in drilling. The thickness of the ore body round the bottom level varies from 4½ feet to 15 feet and it contains approximately an average of 60% to 70% of quartz. The concentrates average about 1½%, and are said to be worth over $30.00 per ton.

The mill which formerly contained 40 stamps is now enlarged by 4 more batteries, making 60 stamps in all, and two more Wilfley tables having been added, bring the total number of concentrators up to 6.

Steam drilling has been superseded by the installation of a large 12 drill air compressor, and a 100 H. P. boiler with the old one of 60 H. P. supply the 160 H. P. engine.

Extensive changes are contemplated at the deck-head. The shafts, which vary in angle and slope between the surface and bottom level, are to be carried up from the latter point on an even inclination, thus shifting the position of shaft house and collar further west. The deck will thus be raised considerably, while a grizzly and additional rockbreaker of the Gates pattern for finer crushing are to be installed here.

A new 100 H. P. boiler has been recently placed in the shaft house, and supplies a 30 H. P. engine, which runs a large size Blake rockbreaker and pump.

The water for this boiler is taken from the pit and is used again by means of a condenser.

A new wharf has just been completed, from which a track is being laid to the shaft house, about 8000 feet to the east, and is to be extended to the mill another 1000 feet east of the shaft. This will greatly facilitate and reduce expense in transportation of supplies, such as coal, etc., and it is expected will assist in paying for itself in wharf rates. A small steam locomotive will give the necessary motive power.

Dolliver Mountain Mining Co.—G. J. Partington is in charge of operations with Dan. McAskill as foreman. Only twelve men are employed at present, as the company's workings have, up to now, not been extensive, being chiefly confined to prospecting and development on the surface at a point some 1¼ miles from the Richardson Com- [illegible] ings.

[illegible] shaft, 12 feet by 6 feet, has been sunk here to a depth of 60 feet, and sinking will rapidly be pushed to cut belts on the turn inside of and similar to the large ore body being worked by the above company.

Two of these veins, measuring 5 feet to 8 feet in thickness, have been proved on the surface, one 500 feet west, and another about the same distance east of the shaft just mentioned. It is evidently the intention of the company, which I am informed is largely capitalized, to greatly increase the field of operations in this prominent district. A wharf has been built near the head of the harbor, and a road from it to the mine, a distance of half a mile is being laid out. As water power is to be used, a very low grade of ore can be treated at a profit.

FOREST HILL.

Strathcona Mining Co.—This company is the only one at present operating in the district.

C. McDonald is manager, and has 50 men employed, the majority of whom are working on the surface.

The belt on which mining is being conducted contains 13 or 14 inches of milling stuff, about 50% of which is quartz.

The main shaft, called the "Compressor" shaft, is 200 feet deep, and from a depth of 135 feet to surface underhand stoping has been carried east 300 feet and west 175 feet.

Near the bottom of this shaft a level has been carried east 300 feet and west 175 feet. Near the bottom of this shaft a level has been driven east for 90 feet and a small block of ore, 40 feet in height, taken out by the overhand method near the shaft At a point, 500 feet east of these workings a new shaft, 14 feet by 4 feet, inside timbers, is being sunk to cut the pay streaks, which pitch eastward at about 60°, and are well defined in the other mine.

Some little work is being done here and in an old shaft 25 feet further east, which is connected underground. A "whim" is the means used for hoisting at present, but the old plant at the "Compressor" shaft is to be moved here, and an improved plant will be substituted in the new shaft house now in course of construction

This new plant will also do the necessary work at an old shaft on the Ophir lead, being opened to the north.

UNIACKE.

The Great Belt Mining Co.—This new company, which is capitalized at $500,000, is operating the old quarry works on the property known as the "British American." Mr. Prince, the manager, was away at the time of my visit; but as the mine had been recently unwatered, an opportunity was presented of examining the pit. The large open cut is divided north from south by a belt of whin several feet thick, running east and west, and it is on the northern side of this that operations are being conducted. This hole gives the following approximate measurements: At top it is 100 feet long by 30 feet wide, and between 60 and 70 feet deep; at the bottom it is about 25 feet long and 30 feet wide; on the north side of the working lies a slate belt, 15 feet in thickness, intercalated with small veins and stringers of quartz, and a few bands of whin. Most of this belt will go to the mill. Of the remaining 15 feet probably between 3 and 4 feet, or say 25%, will be crushed. I understand the intention is, when another stope of about 20 feet is taken out at the top, to cut the east face down square, and to do the same at the west end. Sinking will then be prosecuted to meet the old workings said to be over 100 feet below the quarry bottom. A cable hoist with a large car of 1½ tons capacity is used for extracting the rock which will be picked on deck. A shaft to the north is kept unwatered, and being connected with the old workings on the south side of the large "Whin" belt, the pit is kept dry.

One Rand steam drill is used in breaking down. This drill and the pump and the hoist are supplied by an auxiliary boiler set up outside.

The mill which formerly contained 10 stamps now has 30 in position, 20 of which were running at the time of my visit. This building contains a 50 H. P. boiler and engine.

National Mining Co.—John Kenty is manager, and 18 men are employed underground and on the surface. Work was commenced on the Prince of Wales lead in July, 1900, at which time the shaft was 100 feet deep. It has now, including the sump, attained a depth of 240 feet. At 100 feet in the shaft an incline, 16 feet high, has been driven following a rich shoot which pitches at about 60° to the east. On the west side of the shaft at the same depth, a level has been driven 30 feet and stoping carried from its head to the surface.

A 5 x 3 x 6 Northey pump lifts the water from this level up to the surface, and it is brought from the bottom to this level by another pump. At 170 feet a drift has been made west 130 feet, and from a point near the end an upraise has been driven for 25 feet, following another rich zone which dips in the same direction, and at about the same angle as the shoot mentioned above. Between these two it is supposed (from tests of ore in the shaft) that another praallel "chimney" exists.

At 205 feet, vertical, a level east passes through the incline which extends to a distance of 30 feet below this point.

Most of the ore has been extracted from the block enclosed by the level, the incline and the shaft.

At 29 feet from the shaft in this level cross-cuts have been made north 30 feet, and south 11 feet.

It was originally intended to produce this north cut to intersect a vein, known on the surface; but the lead was ascertained to lie on the adjoining claim.

The working belt, consisting chiefly of slate, is about 30 inches in width and contains from 3 inches to 6 inches of quartz.

The shoot of ore worked by the incline contains a large percentage of arsenical iron. In the workings on the "Queen" lead, 123 feet south of the "Prince of Wales," and several hundred feet west, the shaft has reached a depth of 148 feet. Levels have been driven at the following depths and distances:

At 30 feet a level is in	west	25 feet.
At 20 " " "	east	60 "
At 120 " " "	west	60 "
At 125 " " "	east	75 "

A block has been stoped out west of the shaft at 120 feet for a distance of 25 feet and a height of 40 feet, and on the east side breastwork has been carried from the 125 foot level practically to the surface and for a length of 60 feet.

At 15 feet from shaft, in the 70 foot level, a cross-cut connects with the Prince of Wales lead, 123 feet north, and driving has been done on this vein for 115 feet east. This is being extended by a couple of men to cut a pay shoot further east.

A large Northey pump is used for unwatering the mine, and a boiler and hoisting engine are installed in the shaft house. At the Prince of Wales shaft another boiler and engine is employed.

A small Tremain crusher containing two steam stamps is used for testing.

Westlake Property.—On these areas Messrs. Archibald & Crease are working a 22 inch belt, containing two small leads, which together average about 5 inches of quartz. John Bryson is in charge of operations, and has 13 men at work. The main shaft is 100 feet deep and at the bottom a level has been driven east 35 feet. A few feet from the shaft in this level a cross-cut has been made in the hanging wall for 18 feet.

Another shaft, 64 feet west of the main opening, is down 75 feet, and the ground between these is all worked out.

A block 40 feet long has been has been stoped west of the west shaft, and a drift extended west for 150 feet at the 75 foot level.

An interesting occurrence may be noted in this mine at a point half way between the two shafts. Well marked and distinct striations on the footwall show a dome like formation with the rock pitching each way at low inclinations from this point. Very probably, if studied, this peculiarity would give a key to the segregation of the ore values. At the main shaft a small hoisting plant is in use while a steam pump is employed in the mine. The ore is crushed in an 8 stamp mill.

EAST RAWDON.

The Gold Zone Mining Company.—This company has recently commenced operations in this district (which has been practically abandoned for a number of years) and have pumped out the workings on the "McNaughton" lead, which have been full of water for 14 years.

The mine has been openened by 4 shafts at intervals of 100 feet apart.

No. 1, the most easterly, is 360 feet deep.

No. 2 is 460 feet deep.

No. 3 is 430 feet deep.

No 4 is probably about 150 feet in depth. These measurements are on the dip, which is about 45° to the north.

All the ground has been worked out between shafts Nos. 1 and 3, and between 4 and to a depth of 270 feet in No. 3.

At 330 feet in No 3 a drift has been made easterly on a slight pitch for 200 feet, and the ground between its head and the bottom of No. 3. shaft has been stoped out.

At the 60 foot level, and about 20 feet west of this shaft, a cross-cut has been driven north through the hanging wall for 100 feet, cutting the north lead, which at this place has apparently sprayed o several small stringers.

A curious phenomenon may be noticed here. When the mine was pumped out, after lying 14 years full of water, a crush was found to have been sustained, which buckled and split heavy timbers over 18 inches in diameter. This was not a local movement, but one which brought the whole hanging wall in the mine several inches nearer the foot-wall, and yet no split or parting can be observed in the 100 foot section, (including several slate belts) exposed in the cross cut.

The intention is to sink the main or No. 2 shaft to cut lower shoots of ore, which, though apparently affected more or less by the series of small faults occurring in the mine, are fairly well defined and have a general pitch to the west. The plant includes two Northey pumps, a large boiler and engine, brought from England by the Rawdon United Mining Co., upwards of 20 years ago, and two steam drills, one Rand and one Ingersoll. This boiler supplies the hoist, pumps and drills. The old 25 stamp mill is to be remodelled.

RENFREW.

Big Five Mining Co.—J. D. Horne is in charge of this mine, and has 9 men employed. The shaft, which is sunk on the dip (about 45° S. W.) has reached a depth of 156 feet. All the work except a small block of stoping near the top has been done on the belt south-east of the shaft.

No. 1 level, at a depth of 70 feet, is in 64 feet, at which point the division line between this and the "Thompson" mine on the same belt, is encountered, and connection made between the workings.

At 30 feet from shaft in this level the cross-cut, which had just been commenced at the time of my visit last year, has now been extended to a distance north-east of 155 feet, and has intersected some 8 veins, the majority of which, though not showing visible free gold, have not been given a test by mill or assay. This cut is also in 20 feet south where it meets the "Thompson shaft."

No 2 or the 100 foot level is in east 56 feet, and has also reached the division line where connection is again made.

A drift easterly from this level has followed the course of the division line for 36 feet, and intersected two of the veins found in the upper north-east cross-tunnel.

No 3 or the 150 foot level has likewise reached the division line at a distance from shaft of 35 feet, and it will therefore be apparent that the course of the dip on which this shaft is sunk is bringing it nearer this line, as depth is gained. A sump of 6 feet has been left below this last level.

All the ground up to the division line has been stoped out with the exception of two pillars at the shaft. The highest of these, between levels Nos. 1 and 2, is 40 feet, and 10 feet long, and the other, between levels Nos. 2 and 3, is 50 feet in height, and from 15 to 20 feet long. No values are supposed to be contained in these, as they lie below the pitch of the rich zone, and so far has been proved no pay ore lies on the north-west side of the shaft. It appears from the above description that alternatives presented themselves of either abandoning these working or exploiting the ore opened up in the cross tunnels.

This latter course, I am informed, is to be adopted, and even if the ore is only of a medium grade, several of these being worked together should pay well.

The original small plant is still in operation at this mine.

Up to the present it has been found unnecessary to use pumps as the workings are drained by the adjoining pit.

E. Thompson's Mine.—C. Thompson is in general charge with J. Robinson as Superintendant, and A. McDonald as underground foreman. Thirteen men are employed.

The shaft is vertical for 65 feet, and from there is sunk an additional 75 feet on the vein. It is situated about 80 feet from the above company's shaft, and south-west of the outcrop. The division line between this property and that of the Big Five Company, crosses the shaft at a depth of about 75 feet; and thus the ground at present west of the shaft is practically not available, though its extent increases as depth is gained. On the east side of shaft a level has been driven 78 feet to a large cross sectional fault, which occuring close to the shaft at the surface pitches rapidly to the eastward and throws the eastern portion of the vein 24 feet to the south. This fault has been followed to the belt which has been driven on for 15 feet easterly. Although west of the fault, it contains two leads comprising 3 to 4 inches of quartz, only one of small size continues beyond the break.

From the head of this level the ground has been backstoped to the surface, and the ore has also been worked out below the level to the shaft bottom by the underhand method. A 20 H. P. boiler supplies the Cornish pump and hoisting engine.

The returns from this mine from May, 1900, to August, 1901, a period of less than 12 months show that 452 tons yielded 5,470 unces, valued at upwards of $104,000.00, or about $230.00 per ton.

BLOCKHOUSE.

Blockhouse Mining Co.—Though operations have been continuously in progress no official report has been issued since Sept., '99.

C. McClair is still in charge, with C. Anderson as assistant, and 14 men on the shift.

As stated in my last report, the vein being worked is a fissure with an average thickness of about 8 inches. Its strike is N. 13° W. with a westerly dip of 70°. No. 1 or the "Mill" shaft is now 110 feet deep, and No. 2, situated 66 feet to the southward, is 144 feet deep.

Another shaft down 46 feet is sunk on the vein 116 feet northerly from No. 1.

At 64 feet in the mill shaft an incline was commenced and on a pitch of 40° south on the vein, has now reached a depth of 200 feet, measured on the slope.

All the ground between the shafts has been worked out and south of No. 2 a large block has been stoped away which measures in length as follows:—At surface, 125 feet; in shaft, 225 feet, and from bottom of incline 136 feet

A triangular block of ore has been left in between the 100 ft. level (where it measures 109 feet in height), and the head of the bottom level.

The pay streaks appear to pitch south following a series of small cross slips which lie at an angle of about 40.° One of these can be seen in the overhead stopes in the upper south workings, and another is followed by the incline. Along the bottom level a fault occurs lying at a gentle inclination to the north, and throwing the vein 12 feet into the hanging wall

A winze is to be sunk here 100 feet to work the ore below the level.

The changes in the plant include a 4 drill air compressor, supplying a machine drill, and one Wilfley table for the concentrates.

On the 13th of September an accident occurred at this mine by which N. White lost the index finger of his right hand, it having been crushed by the drill column.

LEIPSIGATE.

The Micmac Mining Co.—This company having purchased the property owned by Messrs. Cashon and Hines, are developing the old workings on the fissure vein. T. W. Moore was in charge with E. H.

Preswick as underground foreman, and 13 men employed. Work was commenced by the new staff on April 15th, 1900, and workings now present the following appearance:—

The main or middle shaft has reached a depth of 220 ft. and from a point 160 ft. from deck, the ore has all been extracted to another shaft 100 ft. south-west of above, and 80 ft deep. South-west of this latter shaft, back-stoping has been carried from surface to a distance of 150 feet from shaft at the 80 feet level. At the 175 feet level in the main shaft, a drift is in north-east for 150 feet, and the vein is stoped out above it, and between the main and another shaft 75 feet to the north-east. It appears that the pay ore in this mine lies in a series of shoots or chimneys, averaging 25 feet in height and 3 inches in thickness, dipping north-east at 9°, and occuring at intervals of 5 feet to 10 feet apart.

The old rope transmission from the mill has been done away with, and at the main shaft a 25 H. P. boiler supplies a Ledgerwood hoist and two steam pumps, a "Northey," which lifts from the sump to a cistern, and a "Blake," which unwaters from there to the surface. One 10 hour shift is employed in the mine and the 10 stamp mill crushes night and day.

Nova Scotia Development Co.—C. N. Crowe, formerly foreman at the Brookfield Mining Co., is managing operations here, and with 17 men, is working the old "German" property, so called. This mine, which is supposed to be situated on the fissure vein, worked by the Micmac Co., lies over a mile to the westward of their workings. The vein dips to the north, the angle varying from 65° at the surface to 80° at the bottom of the shaft, which is 125 feet deep. Levels have been driven here west 37 feet and east 40 feet, and between the depths of 43 feet and 73 feet, blocks of ore have been extracted to lengths of 40 feet on the west side and 160 feet on the east side of shaft.

In the latter place a connection has been made with some old workings opened by a shaft some 250 feet east of the main shaft.

One of the chief difficulties encountered by the old company in working this mine was their apparent inability to cope with the water. This comes largely from the surface, especially in the wet seasons. Mr. Crowe, to obviate this difficulty, has raised the shaft collar some 6 feet, and caulked the cribbing to a point below the rock, and has further drained the surrounding low ground by a trench several hundred feet long.

boiler and steam hoist have been installed at the shaft and the ller mill has been dismantled.

VOGLER'S COVE.

East Eagle Mine.—T. Cameron and 12 men are working here. A shaft has been sunk on a large vein, crossing the strata and measuring some 9 feet in thickness at this point. The strike of the vein is a little west of north, and the shaft is down 120 feet on the dip which is at a fairly steep angle.

At 90 feet a drift has been run northerly on this large quartz body for about 40 feet, and on the other side of the shaft the drift is in 48 feet. About half way to the face of this latter working, the direction has been changed and another vein about 2 feet in thickness has been followed while the large lead is still apparently in the west wall. About 35 feet south from the 120 feet shaft a sink of 65 feet was made in 1899 on the smaller lead, and a drift made south from the bottom for an additional 35 feet. This working, is of course above the present place.

A boiler, hoisting drum and steam pump comprise the plant at this mine.

MILLS' VILLAGE.

Gold Eagle Mining Co.—Work was stopped at this mine on September 1st; the reason given being scarcity of fuel and water. However the workings have been kept pumped out, and have reached the following state of development:

The shaft is 190 feet deep and the 110 feet level has been extended west to 220 feet and east to 110 feet. On the west side of the shaft, the ore has been back stoped from near the surface to a point 15 feet from the head of the level. and on the east side it has been worked out to a vertical face 115 feet from shaft. At 100 feet east of shaft an air shaft connects this level with the surface. The cross-cuts at the intersection of this level with the shafts have reached the following distance:—south 65 feet and north 62 feet. From the face of this latter cut, a diamond drill hole was bored for an additional 60 feet at a slight dip from the horizontal. Although two veins, the "Battery" lead 4 inches thick, and 65 feet north of the lead being worked, and the "Zwicker" lead, 5 inches thick, and 30 feet further north were opened at the surface, neither, I am told, were encountered by the cross-cut or bore hole.

A shaft has been sunk 20 feet on the Zwicker vein, and a cross-cut driven south 33 feet.

In the main shaft two pillars have been left on the west side; one 60 feet high by 15 feet long, and the other 20 feet high by 15 feet in length.

The vein averaged, so far as could be seen by the faces, exposed from 4 inches to 5 inches of quartz, and the belt is about 33 inches wide, though towards head of the west level it narrows down to 20 inches.

The mill is of 10 stamps with a capacity for 10 more, and contains a grizzly Blake rockbreaker and automatic feed, and one Wilfley concentrator.

A large boiler supplies the 45 H. P. mill engine and 20 H. P. hoist. Another boiler is used for the 3 drills (2 Sullivan and 1 Rand), and the pump; a No. 3 Cameron.

A large electric light dynamo supplies the lights used in the mine and buildings, and on the roads. These I was told numbered 65.

FIFTEEN MILE BROOK.

Lowe Bros.' Property.—On this property J. McGrath, as manager, and 11 men are working a slate seam containing a 4 inch vein of quartz in a working belt of "whin." The shaft, which is 70 feet deep, dips slightly to the south, and has been sunk through the footwall 10 feet behind the vein.

At the 50 foot level in the shaft a place was broken out west for 10 feet, from which point cross-cuts were driven north 18 feet, and south 10 feet to the vein, on which a drift was made 50 feet east, and 10 feet west. At the west face of this drift another cross-cut south was driven 30 feet, and in it a small vein, folded directly over, in anticlinal form, was cut. On further development it may be proved to be the case that though the rock is dipping to the south, an overturn has occurred, and this underlie is really on the north leg of the main fold.

At the time of my visit they were breaking through the hanging wall at shaft bottom to tap the vein. Considerable timber will be necessary here to support the heavy mass of overhanging rock in the roof.

NORTH BROOKFIELD.

The Brookfield Mining Co., Limited.—Two years having elapsed since an official visit was paid to this mine, much progress was noted in the underground development. Nearly 1600 feet of sinking and driving has been accomplished, and some 16000 tons of milling ore produced by the increased workings. W. L. Libbey is general manager, with A. S. Crowe as underground foreman.

The company employ 80 men as miners, millmen and on the surface, and work 2 shifts of 10 hours each.

The following notes will show the extensions of levels etc., to date, when by comparison with the last report on the mine, the progress may be seen. The incline is driven on the vein at an angle of 35° westerly, and has reached an actual distance measured on its pitch of about 1700 feet:—

Level No. 5 at a depth of 470 feet is driven west 460 feet.
" 6 " 525 " 440 "
" 7 " 582 " 440 "
and east 70 feet.
Level No. 8 at a depth of 642 feet is driven west 490 feet.
" 9 " 702 " 260 "
and east 90 feet.
Level No. 10 at a depth of 762 feet is driven west 80 feet.

These depths are measured on the dip of the vein.

As will be seen no additional work was done in the upper levels above No. 6.

The vein appears to vary considerably in size at the faces of the levels as will be seen by the actual measurements taken.

In No. 5 level, vein is split up into stringers.
" 6 " it shows about 6 inches of quartz.
" 7 " it is split up.
" 8 " it measures 5 inches.
" 9 " it is split up.
" 10 " about 18 inches of quartz is shown.

At bottom of incline vein measures about 2″ of quartz.

The above figures refer only to the actual quartz in the belt, and does not include any black rock that may be milled with it.

Three pumps, two Northey and a Cameron, are installed in the mine, though only two are used. At shaft house over the incline a 35 H. P. boiler supplies these pumps and a 30 H. P. hoisting engine which supplants a smaller engine used previously. Little change has otherwise taken place in the plant, which includes the air compressor, a 40 stamp mill, 8 "Triumph" concentrators and the, large chlorination plant. Rand air drills of the "Slugger" (No. 32) type are in use at the mine. The Company have recently completed about three miles of log tram road to their timber limits.

KEMPTVILLE.

Considerable capital it is said, has recently become interested in this district, development work is proceeding with the expectations that shortly large mining operations will be actually in force.

The International Mining Co.—This New England corporation are mining in the western part of the district, and employ T. C. O'Neil as manager, Alex. Fraser, foreman, and 16 men.

On the "Cowan" lead, a shaft is down 90 feet on a dip southwest of 80° and 70 feet deeper on a slightly overlying angle to the bottom, making the total depth 160 feet.

At a depth of 90 feet a drift has been run on the vein for 60 feet north east, and from the face underhand stoping has been carried to the surface. On the opposite side of the shaft the ore has also been extracted to the surface by the same method. At shaft bottom a level is in 37 feet westerly, and from its head cross-cuts northerly 160 feet and southerly 50 feet have been driven. At 36 feet in the south tunnel a large ore body extending to the face was encountered. This has been named the O'Neil belt, and a pit 15 feet deep has tapped it at a point 235 feet westerly from the shaft on the surface.

The north cross-cut is being driven to intersect a large belt 220 feet to the northward.

The shaft house contains a 60 H. P. boiler which supplies the pump, hoist and the low pressure half of a 6 drill air compressor, which runs 2 machine drills employed in the cross-cutting work. As will be observed little but exploiting has as yet been done. The mill, though containing 15 stamps, is old fashioned, and will be completely remodelled.

The Argonaut Mining and Milling Co.—E. F. Walton, Manager, W. Rice, Underground Manager. A new vertical shaft 90 feet deep intersects a large belt at 60 feet. This belt is in the form of a shoot pitching westerly, and at this point contains about 13 feet of milling material, which at the last crushing, and under unsatisfactory milling conditions, gave over 11 dwt. to the ton. A cross-cut north from here connects with the old workings on the "Nash" lead and has also cut several other good looking belts. The main belt, which appears to be split up, and in a very irregular shape here, has been worked out east for a distance of 155 feet to an old shaft 70 feet deep.

The present intention is to sink the vertical shaft for an additional 150 or 200 feet when it is hoped that the shaky and broken nature of the ore deposit and accompanying walls will be overcome, and regularity prevail. Very possibly this shaft will when depth is gained run out of the thick ore until another shoot or chimney is reached. The mill which is primitive and inefficient in its equipment contains 10 stamps. A Blake rock breaker and an improvised automatic feed, also form part of the plant.

A 45 H. P. boiler and 35 H. P. engine supply power for the hoist, 2 Worthington pumps, rockbreaker and stamps; and run a small Ingersoll compressor. One Rand drill is employed underground.

CRANBERRY HEAD.

Cream Pot Mining Co.—J. D. Huntington Agent. This mine has been practically idle for the past 2 years.

The two tables annexed are self-explanatory, and give mill details in some of the districts and approximate prices of mining commodities, which may assist in making rough estimates.

I remain,

Yours obediently,

D'ARCY WEATHERBE, C. E.

OXIMATE PRICES OF LABOR, FUEL, ETC., IN NOVA SCOTIA GOLD MINES.

CT.	WAGES OF MINERS.	KIND OF FUEL USED.	PRICE OF FUEL.		PRICES FOR MINE TIMBER.			
			Per Cord.	Per Ton.	Stulls.	Remarks.	Scaffold Poles.	Remarks.
			$ c.	$ c.				
....	*This varies from $1.00 to $1.50 per shift throughout the Province.	Wood.	1 30	....	3 cents	Per running ft., 9 ins. at small end.	$5 00	Per 100, 16 ft. l'g.
....		Wood.	2 40	....	$2 25	Per cord.	....	....
. ...		Wood.	1 60	....	5 00	Per 1000 ft., log meas., 12 ins. and upwards.	3 00	" "
ou		Wood.	2 00	....	3½ cents	Per running ft., 12 ins. at small end.	5 00	....
Harrigan Cove....................		Wood and Coal.	2 25	4 25	4 "	Per running ft., 9 ins. at small end.	5 00	" "
Goldenville		Coal.	....	4 35	5½ "	Per running ft., 10 ins. at small end.	5 00	" "
Wine Harbor		Coal.	....	4 50	5 "	Per running ft., 8 ins. at small end.	4 50	" "
Upper Seal Harbor		Coal.	....	4 70	4 "	" "	3 00	" "
Forest Hill		Wood.	2 00	....	2 "	" "	....	" "
Waverley		Coal.	....	....	4 "	" "	4 00	....
Leipsigate		Wood.	2 40	....	2½ "		5 00	Per 100, 12 ft. l'g.
Uniacke		Wood.	2 50	....	3 "	Per running ft., not less that 6 ins.	....	Per 100, 16 ft. l'g.
Brookfield		Wood.	1 80	....	2 "	Per running ft.	5 00	" "

*This wage is for muckers, etc., machine men and foremen generally getting more.

SUMMARY STATEMENT SHEWING MILL DETAILS IN SEVERAL DISTRICTS.

DISTRICT.	MILL.	Motive Power.	No. of Stamps	Capacity of ore bins.	Is a Grizzly Used.	Pattern and Size of Rock Breaker.	Is an Automatic Feed Used.	Weight of Stamp.	Material of Stamp Parts.			Are inside Plates used in Battery.	Nature and No. of Screen.	Pattern and No. of Concentrators.	*Approx. Cost of Milling.
									Shoes.	Dies	Heads.				
Waverley........	Waverley G. Mg. Co.	Water.	60	350	Yes.	Blake, 9 x 15.	Challenge & Hammond.	950	Steel.	Steel.	Cast Iron	No.	Mesh, 24 to 26.	4 Wilfleys.	$ 30
Stormont	Richardson Gold Mg. Co	Steam.	60	About. 300	None.	Blake, 10 x 7.	Hammond.	1000	....	......	....	Yes.	Mesh.	6 Wilfleys.	50
North Brookfield	Brookfield Mg. Co.	"	40	80	"	Dodge, 10 x 15.	Challenge.	900	Chr	ome	Steel.	No.	Mesh, 24.	8 Improved Triumph.	60
Tangier	Worcester Tangier Co.	Water & Aux. Stm	20	50	"	Gates,	Yes.	"	Cas	t Ir	on.	....	Mesh.	1 Wilfley.	......
Moose River	Touquoy G Mg. Co.	Water.	15	None.	None.	None.	None.	850	"	"	"	Yes.	Mesh, 24	2 Frue Vanners.	40
Harrigan Cove ..	St. Anthony G. Mg. Co.	Steam.	10	35	None.	Blake, 9 x 15.	Hammond.	850	"	"	"	"	Mesh, 28 to 30.	1 Wilfley.	1 00
Blockhouse	Blockhouse G. Mg. Co.	"	10	22	Yes.	Blake, 5 x 7.	Yes.	750	"	"	"	"	Mesh, 32.	1 Wilfley.	1 00
Sherbrooke	Bluenose G. Mg. Co.	Steam.	30	125	None.	Dodge and Gates.	Yes.	950	Chrome Steel.	Cast	Iron.	....	Mesh, 24 to 30.	2 Wilfleys.	......
Sherbrooke	Royal Oak Mg. Co.	"	"	35	"	Dodge, 7 x 9.	Challenge.	"	Ste	el.	Cast Iron	Yes.	Mesh, 24.	1 Wilfley.	85
Leipsigate........	Black Hawk M. Co	Steam.	10	65	Yes.	Blake.	"	950	Forged	Steel.	"	"	Mesh, 24.	2 Wilfleys.	1 50
Lake Catcha	John Anderson's.	"	"	None.	None.	None.	"Frenchman"	850	Ste	el.	"	"	Mesh, 24.	None.	1 00
Moose River	Moose River G. M. Co.	Water.	10	"	"	"	None.	700	Ca	st Ir	on.	No.	Mesh, 24.	"	50
Mills Village	Gold Eagle Mg. Co.	Steam.	10	20	Yes.	Blake, No 2.	Disc. Pattern.	850	I	ro	n.	Yes.	Mesh, 24.	1 Wilfley.	.....

*These figures were supplied by the Managers.

LEAD.—At the Cheticamp Mining Co.'s property, at Cheticamp, the following work has been performed:

The main slope has been driven a distance of 112 feet from the line of the outcrop, 9 feet in width and 18 feet in height, the cubic contents of which contains upwards of 2000 tons of rock; for the first 60 feet nearly all of the material removed was barren or void of metallic sulphides, which it was found necessary to mine in order to open up or attack the deposit properly. The remaining 50 feet has carried sulphides of good quality, which I will refer to more fully when explaining the tabulated statement herewith appended of the various mill tests made.

In addition to the above work we have constructed a skip-way from the bottom of the slope to the crusher floor of the mill, a distance of 300 feet, installed a boiler, hoist, forge, Wilfley table, and made numerous changes to the milling plant in order to improve its efficiency.

The profitable concentration of this ore has presented some difficulties which, it is believed, have been overcome, and arrangements have been made for the installation of compressed air, and improved milling and concentrating plants, so that an average daily yield of over 50 tons may be maintained.

COPPER.—During the past season some additional work was done on the Coxheath property near Sydney. The details of the work are as follows;

The following statement of operations during the year ending September 30th, 1901, at Coxheath, Cape Breton, on areas held under copper leases 95, 106 and 250, is hereby respectfully forwarded for the information of the department:

Owing to the company having temporarily diverted its funds to the instalment of a steam saw mill on its timber lands at Watson's Creek, near the N. W. Arm of Sydney Harbor, mining operations on its copper leases have been confined during the past year to surface explorations and the sinking of pits; some of the older pits have been sunk to a depth of 20 to 35 feet, more definitely proving the dip and strike of the western extension of the Coxheath veins and the composition of the gangue rock.

From one pit on lease 95 (Coxheath) several hundred lbs. of the low grade ore was shipped to Denver, Colorado, for a concentration at ole, with the following result:

n, 3% copper.

Concentrates.—Copper, 9.90%; iron, 27.30 %; silica, 35%; tailings, copper, 1%.

In actual practice, with improved slime saving apparatus, the loss in the tailings can be reduced to considerably less than 1%.

The pits sunk on the northerly vein on lease 106 (Argyle) continue to show more quartz in the Gangue rock than the lode on lease 95. Average samples of the ore from two of the pits have been assayed with the following returns:

Pit "A"—Copper, 2.15 p. c.; gold, .036 oz.; silver, 3 ozs.
Copper, 3.26 p. c.; gold, .075 oz.; silver, .16 oz.

Pit "C"—Copper, 4.55 p. c.; gold, .223 oz.; silver, 6 ozs.
Copper, 4.47 p, c.; gold, .04 oz.; silver, 16 oz.

The amount of labor performed during the year was as follows:

Skilled labor above ground, - - -	361 days.
Unskilled labor above ground, - - -	827 days.
Teaming labor, - - - - - -	114 days.
Total days' labor, - - -	1303 days.

Mr. W. N. Young continued working in the district between Mira and Gabarus, and is reported to be testing a numbr of properties which will, it is expected, be available for working.

A little work was done by the Copper Crown Mining Company, at intervals, during the summer.

At Cape D'or, Cumberland Co., the Colonial Copper Company have made extensive developments on zones in the trap rock carrying metallic copper. The quantity of available rock, and its percentage of contents are reported as encouraging.

The following memo. shows the work performed:

COLONIAL COPPER MINE.—This mine is situated at Horse Shoe Cove, Cape D'or, Cumberland County.

No. 1 shaft is sunk 330 feet 12 x 6 inches wide. It is intended for a double cage 4 feet 6 inches each, and 3 feet for manway. It is a splendid piece of work, timbered with deal 3 feet thick down to the bottom; this shaft when down to the lode will be 350 feet.

One thousand feet south of No. 1 shaft No. 2 shaft is sunk 60 fe id timbered 56 feet from top.

One mile from No. 1 shaft they are driving a slope down; it is now sunk to the depth of 120 feet, at an angle of 45 degrees.

There is good steam power on No. 1 shaft, and steam machinery on the way for the others.

They have built snug cottages for their workmen and at an early date I believe the Colonial Copper Co. will be in a position to give a good account of themselves.

J. A. Hanaway is superintendant of those works.

At No. 1 shaft there are 2 drill men, 4 miners, 2 deckmen, 2 engineers.

At No. 2 (incline shaft), 2 drill men, 2 miners, 2 deckmen, 2 engineers.

In tunnel at No. 2 shaft—1 drill man, 2 miners.

At No. 3 shaft—4 miners, 2 deckmen, 2 engineers.

As to the laborers above ground during the summer and fall there are employed 60 to 75 men. During the winter months not more than 15 or 20. Most of the work so far has been development work.

GYPSUM.—The operations in the gypsum quarries do not call for any special reference.

MANGANESE.—Practically speaking no work was performed on the deposits of this mineral during the past year.

BARYTES.—The Messrs. Henderson and Potts continued mining at Cape Rouge, Inverness County, and extracted about 600 tons of high grade ore.

BORING MACHINES.

MEMORANDUM OF BORING OPERATIONS WITH THE GOVERNMENT DRILLS.

Within the past 18 months 5 drills of different patterns have been purchased by the Government, and have all been kept continuously employed since their arrival. They include the following patterns:—

Two large size Calyx drills with 1,000 feet guaranteed boring capacity, and full equipment, including a special apparatus for the preservation of coal cores, and all the parts necessary for producing a 5 inch or 6 inch core as desired. These drills are made by the Davis, Calyx Drill Co., of New York, and retain besides the cores a perfect record of the formation passed through in the chips and sludge in the "chip cup."

One steam "Beauty" Diamond drill (class C), supplied by the Sullivan Manufacturing Co., of Chicago, which has a guaranteed capacity of 800 feet, and produces a core $\frac{15}{16}$ of an inch in diameter.

Two Diamond hand power drills supplied by the same company, and capable of boring 300 feet. The cores produced by these are of the same diameter as the steam drill, and the parts of all three are interchangeable.

The first Calyx drill commenced boring in Oct., 1900, at a point on the Berteaux Farm, about three miles south of Wilmot Station, and on the road to Torbrook. Three holes were put down here, the deepest of which was 330 feet. Through unfortunate locations no vein was actually bored through, though excellent indications were shown by the cores. It should be mentioned that the rocks in this locality consist of hard slates and quartzite bands dipping at a steep angle to the south, and with a strike of N. 62° E.

The next position chosen was in F. Wheelock's farm, about 2 miles west of the first situation, and on the north side of the valley formed by the Torbrook or Black River. This hole proved eminently successful, and the surface having being carefully examined at first, three distinct veins were intersected, at the depths shown in the following section :—

MATERIAL.	Thickness of Strata.		Total depth from surface.	
	Ft.	In.	Ft.	In.
Surface detritus	14	....	14	....
Slates and quartzite	98	....	112	....
Brownish red hematite ore (Fossiliferous)	38	....	120	....
Slates	176	6	326	6
Brownish red hematite ore	38	6	365	....
Slates with small seams of ore	75	....	440	....
Brownish red hematite ore	36	....	476	....
Slate and bands of quartzite	144	....	620	....

The dip of the rock in the above hole changed from 84° at surface to 70° to the south, so it will be seen that the veins cut showed a good thickness. The drill was then moved across the valley to the McConnell farm, about 1 mile south, and two veins on the north dip were cut there, as shown below :—

The strata flattened here from 87° at the surface to 83° at the bottom of the hole.

MATERIAL.	Thickness of Strata.		Total depth from surface.	
	Ft.	In.	Ft.	In.
Surface material	5	....	5	....
Slates showing indications of ore	57	...	62	....
Magnetic ore	30	....	92	....
Slates with patches of ore	38	....	130	....
Magnetic ore	29	....	159	....
Slates containing small seams of ore	33	....	192	....

In the hard rocks of this section, and under severe conditions, an average rate of boring was attained of nearly 1 foot per hour at a cost of about $2.00 per foot, while in the softer portions of the slates from 4 feet to 6 feet per hour was done easily.

The drill was removed during the summer of 1901 to Upper Kennectcook, where boring was commenced on Aug. 16. Though this formation has been referred by the geological survey to the Lower Carboniferous, and in parts to the Millstone Grit, surface explora-
ions showed fair indications of coal though the quality and thickness
ired to be inferior. The rock dips at about 30° southeasterly.
ole was started at a point between the line of the Midland
the Kennetcook River, and about 40 feet from supposed

line of outcrop of the seam. The total depth reached in this hole was 132 feet, shales and sandstones constituting the cores, while at about 62 feet from surface 49 inches of a slaty coal was gone through. Unfortunately, in encountering this the coal cone lifter was not put on, and thus no core was retained. The next hole was at a point 300 feet from outcrop, and when down 250 feet it was found that it was necessary to line the hole with casing pipe in order to save it.

As this casing pipe is an expensive article it was decided to improvise a cheaper product made of sheet steel. After 200 feet of this had been put down the rivets cut, and the hole had to be abandoned. The records showed the material passed through to consist chiefly of sandstones and shales, with a few thin beds of gravel and blue clay. These beds are highly fossiliferous, the specimens obtained including calamite, cordaite, lepidodendra, sigillaria, etc.

The other Calyx drill was received by the department during the past summer and was sent to Hantsport, where at the present time a depth of 225 feet of boring has been attained. The rock here consists of sandstones and shales, and dips south east at a very flat angle.

Steam Diamond Drill.—This drill was first used in strata, referred by the Geological Survey to the "Millstone Grit," near North Sydney and several holes were bored at Pottles Lake, Ferris Lake and Little Bras D'r, nothing of value being discovered.

Though this drill is only guaranteed to bore 800 feet over 900 feet was done in one of the holes. Sandstones conglomerate, and an occasional bands of slate was passed through. The drill was next taken to the *Drummond Colliery, where it is now being operated on the 1300 foot level.

One of the hand drills was used a short time at Whycocomagh in the iron, but operations were suspended before much was accomplished. It was then taken to Cape Breton, where it is now operating near Lingan to prove known seams to the deep.

The other hand drill was two months operating in the Musquodoboit Valley, and though over 300 feet of carboniferous measures were explored, nothing of value was found. The proceedure in obtaining the drills is as follows: The applicant with two surities give a bond for the value of drill and equipment in which the following agreement appears:

Whereas, The above bounden .... has obtained from the said Commissioner of Public Works and Mines, the use of a drill, the property of the Government of Nova Scotia, for the purpose of boring for mineral upon certain conditions, to wit:

---

*Since writing a seam of coal upwards of 9 feet has been intersected at about 300 feet.

that the said .... shall pay all expenses of transport from place of storage to site of bore hole, of setting up, running, operating and maintaining the same in working order, including cost of all piping, rods, diamonds and other material found necessary, also all wages, fuel and damage, including wages of man placed in charge of drill equipment by the said the Honorable Commissioner of Public Works and Mines, and all charges of removing drill equipment from bore hole to bore hole, and of returning the same to such place as may be appointed by the said Honorable Commissioner of Works and Mines, and shall also keep a correct record of all strata bored through, and place the same at the disposal of the said Honorable Commissioner or his agents, and shall deliver over the drill equipment in good order to any person or persons appointed by said Honorable Commissioner to receive the same.

That the government were particularly fortunate in their selection of the drills is evident from the fact that though upwards of 5000 feet of boring has been accomplished not a hole was lost or had to be abandoned on account of any inefficiency in the machines.

D'ARCY WEATHERBE, C. E.,
Mines Department.

ARBITRATION.

In the matter of the Miners' Arbitration Act, and in the matter of disputes in respect to wages, between the Dominion Coal Company and its employees, numbers one and three divisions at Reserve, Dominion No. 1, Glace Bay; numbers 3 and 4 and Bridgeport Mines.

BOARD OF ARBITRATORS:

The Honourable Mr. Justice Graham.
The Honourable Robert Drummond.
The Venerable the Archdeacon of Cape Breton.
Henry S. Poole Esq., M. A. F. G. S.
Angus G. Macdonald, Esquire.

Whereas, disputes in respect to wages have arisen between the Dominion Coal Company and its employees, numbers one and three divisions (as classified under the said Act), at the said mines; the employees of the said division, number one demanding an increase of 12 per cent on their wages, and the employees of division number three, demanding an increase in wages of 50 cents per day for mechanics, and of 25 cents per day for their help, to come into force on the first of January, 1901; and the Company not complying with the said demand;

And whereas, Under the said Act, the said disputes were by an order of the Honorable, the Commissioner of Public Works of Mines, on the 4th day of March, 1901, referred under the said Act to a Board of Arbitrators.

And whereas, The arbitrators have been duly appointed under the said Act to comprise the said Board, that is to say, the first two named have been appointed by the Governor-in-Council, the third and fourth named have been respectively appointed by the agents of the said divisions and of the said Company, and the last named has been appointed by the two arbitrators appointed by such agents, and with the consent of such agents, and such arbitrators have been sworn according to the said Act.

Now having duly entered upon the said reference and considered the cases respectively presented by the said agents on behalf of the said divisions and the said Company respectively, and after hearing the evidence adduced by them respectively and the arguments, and having deliberated, we hereby make this our award in respect to the premises.

1. We decide and award that neither of the said divisions is entitled to the increase demanded by it in whole, or in part.

2. In respect to the demand of number one division, the following reasons for our decision are submitted:

In or about the month of May, 1900, the Company in anticipation of an advance in the price of coal granted to the miners an increase.

While published prices and local rates showed a considerable advance in the prices of coal as compared with those of previous years naturally leading the employees to assume that the Company was in receipt of a corresponding increase; the evidence showed that this assumption was erroneous. While prices advanced in the local market, the existence of long term contracts previously entered into by the Company at low rates, and covering by far the greater part of the Company's sales had the effect of nullifying to a large extent this advance. In addition, the net rate per ton received by the Company was further reduced by the increased cost of materials and production to such a degree that the net average price per ton realized by the Company from the sales of coal for the financial year ending February, 1901, was not one half cent per ton in excess of that of the preceding financial year.

The Board has not dealt with the prospective trade of the current financial year, but if it should result at its close in the Company realizing increased prices over those of the financial year ending February, 1901 warranting an advance in wages, the miners should, in the opinion of the board, participate in such profits on a basis to be agreed upon or otherwise determined.

3. In respect to the demand of the mechanics and their help, it appears that after the demand was made, that is to say, on or about January, 1901, an increase of wages was granted by the Company. We are of opinion that as compared with other similar wage earners they are now receiving a fair rate of wages.

There may be exceptional individual cases which require readjustment, but with such cases the board cannot satisfactorily deal, and recommends them to the further consideration of the management.

Dated at Truro, N. S., this twenty-fifth day of April, A. D. 1901.

WALLACE GRAHAM.
R. DRUMMOND.
DAVID SMITH, Archdeacon N. S.
HENRY S. POOLE.
ns. A. G. MACDONALD.

HALIFAX, June 29th, 1901.

TO THE HONORABLE C. E. CHURCH,
Commissioner of Public Works and Mines.

SIR,—As chairman of the board of arbitrators, selected to determine the disputes in respect to wages between the Dominion Coal Company and certain of its employees, I have the honor to report, pursuant to R. S. 1900, C. 21, S. 18, the operations of the board under the order of reference made by you on the 4th day of March, 1901.

The members of the board, with the exception of the Venerable the Archdeacon of Cape Breton, met, pursuant to notice of the chairman at Halifax, in the Legislative Council chamber, on the 9th of April, 1901, and were sworn in. Mr. W. B. Ross, K. C., appeared for the company and Mr. John Moffatt for the employees. Mr. W. H. Huggins was appointed secretary. The course of procedure was discussed, and it was determined that each party should present in writing a statement of their case.

On the 10th the board met again, when the Archdeacon of Cape Breton, being present, was sworn in, and the case of the Employees was presented.

On the 11th the case of the company was presented. Both cases were then read and the examination of witnesses for the employees was commenced and lasted throughout the day.

On the 12th the examination of witnesses was continued and the board adjourned to meet on the 18th at Glace Bay in Cape Breton.

On the 18th and 19th, at Glace Bay, the examination of witnesses was continued, and after a meeting for discussion at Sydney, the board adjourned to meet at Truro on the 25th. The Board met at Truro on that date, then further evidence was taken and an award made.

In all, there were three witnesses on behalf of the employees and eleven on behalf of the company.

The evidence of the witnesses was taken stenographically by the secretary of the board. I have the honor to enclose a copy of the evidence. I, of course, except such portion of it as would "divulge matters of the employers' business." These matters, under section 12 of chapter 21, the arbitrators are sworn not to divulge.

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The secretary, under section 11, has filed with the Prothonotary of the Supreme Court for the County of Cape Breton a copy of the complaint lodged in your department, and also a copy of the award.

The fees of the arbitrators and their travelling expenses with those of the secretary have been defrayed by your department. I believe that this became necessary owing to the waiver of the provision requiring the employees to submit to a very large deduction from their wages in order to constitute a deposit for forfeiture in case of an adverse award and to defray expenses. The amendment of this provision was very necessary in the interest of employees and will, I think, tend to make arbitration a more successful mode of dealing with such disputes.

Perhaps the interests of the province have been subserved to such an extent by the successful settlement of the disputes in this case, by an unanimous award, that the payment of these expenses will be considered a minor matter.

It may not be out of place to refer to matters in this Act which would be the better of an amendment, although, owing to the very conciliatory and sensible conduct of the agents of the parties, and I may add of my colleagues on the board, no technical difficulties were raised.

The powers of the arbitrators or rather the expression "dispute" as to wages, required further definition.

The first meeting of the board ought to be summoned by the Commissioner of Public Works and Mines or by the chairman of the Board, if the government is given power to appoint the chairman.

Provision should be made for the oath not to divulge the company's business being taken by others than the arbitrators. For instance, the employees' agent and their solicitor, if they have any, are necessarily present when the evidence is taken.

In conclusion I wish to express on behalf of the board my obligations to Dr. Gilpin, the efficient deputy of your department, for invariable courtesy and pains, bringing its labors to a successful issue, and also to the agents of both parties for their extreme fairness and frankness in conducting the case.

I have the honor to be

Your obedient servant,

WALLACE GRAHAM.

PROVINCIAL MUSEUM

AND SCIENCE LIBRARY.

PROVINCIAL MUSEUM,
Halifax, 22nd January, 1902.

To E. GILPIN, Jr., Esq., LL. D., etc.,
Deputy Commissioner of Public Works and Mines:—

SIR,—I respectfully present herein a report on the Provincial Museum of Nova Scotia and the Provincial Science Library, for the past year.

During the year a great increase took place in the number of specimens received. In the previous year, 133 accessions were catalogued, representing 1202 specimens; whereas during 1901 there were 545 accessions, embracing 2660 specimens.* These specimens almost entirely related to the province, and filled many blanks hitherto existing in the collections.

In the last report it was stated that the mineralogical specimens would be finally arranged on the return of the large and important exhibit of Nova Scotian minerals that had been sent to the Paris and Glasgow exhibitions. On the close of the latter exhibition, however, the collection, with the exception of the gold exhibit, was presented to the Imperial Institute of London, and it will now devolve upon us to collect for our own Museum a series that will fill the great blank caused by the non-return of this large collection. It will therefore probably take some time to bring the Nova Scotian mineral collection into a satisfactory condition.

A large part of the time has been taken up in determining and labelling old specimens throughout the Museum. The marine invertebrates have been examined and labelled within and without the jars, and rearranged, This collection was found to contain a number of very interesting and uncommon species.

The collection of woods presented by Mr. Starr has been fully labelled in the manner referred to in the last report, and has a good appearance. A special glazed case for the collection is being constructed.

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pecimens are contained in the Lindsay Herbarium.

Mr. A. H. C. Prichard, late of the Boston Museum of Fine Arts, who in 1900 very kindly prepared and presented to the Provincial Museum an exceedingly excellent manuscript descriptive catalogue of our ancient coins, during the past summer spent several months in a study of the modern coins, and has presented us with a similarly detailed descriptive catalogue of them in manuscript. He also published a series of interesting articles in the local press, based upon the ancient Roman coins in our cases. These articles greatly increased the public's interest in this department, and this interest in some cases has taken the form of donations. Mr. Charles Archibald of Halifax has presented a large series of coins which fills a number of blanks in the cabinet.

Since the last report a specially prepared "accession book" has been opened, the form of which is the result of considerable correspondence with other museums, and the accession entries are now all transcribed therein, a work that has taken some time.

It may be mentioned that all labels and record entries are written or hand-printed with waterproof India-ink, so that the fading of a label or entry is now impossible. Labels are mostly attached by strong linen thread to the specimens to prevent loss or misplacement. The permanent numbers, however, painted on the specimens, make the loss of data impossible, even if the label should be lost.

In August I spent a few days collecting in the Horton series of rocks at Horton Bluff and in the vicinityof Hantsport, and in September collected in the Millstone Grit, Coal Measures, New Glasgow Conglomerate, and Permian or Permo-Carboniferous of Pictou County, so that we now have a series of specimens representing the coal measures and the formations that over- and under-lie them. This should prove of service to the many who are seeking information regarding the the rocks, etc., that accompany coal. A number of miscellaneous local specimens were donated by persons met during these trips. As much time as possible has been spent in field work in the vicinity of Halifax.

To further assist in the study of lithology, a typical series of rock specimens and constituent minerals of rocks, numbering 150, was obtained from Frazar, of West Medford.

Efforts are being made to obtain specimens of rocks illustrating in general the geological formations of the Province, and to draw attention to those rocks that are of economic importance.

Prof. E. Haycock, of Acadia College, has presented a series of rock
ating the geological history of the Gaspereau Valley,
ich he is publishing a paper.

Mr. R. H. Brown, late manager of the Sydney Mines, has donated a umber of very fine fossils from the " main seam " of coal at the old ydney Mines, the result of a number of years' collecting with special cilities. We are also indebted to Mr. F. H. Mason, Dr. A. J. Cowie, r. Weatherbe of the Mines Department, Prof. Kennedy of King's ollege, and others, for specimens of minerals and fossils. The Nova cotia Steel and Coal Co., through Mr. Kitto, has given a set of their es, etc.

Recognizing the gradual disappearance of old customs among the icmac Indians, we are securing such implements, etc., as illustrate eir habits during historic times. Among these articles is a small rk canoe of typical tribal form, fully equipped with every appliance. he Micmac names for the articles obtained, are noted whenever ssible.

Dr. A. H. C. Lindsay, of Halifax, has donated a large herbarium of ova Scotian plants, with cabinet.* This is a very valuable addition. was one of the collections from which Dr. Lindsay compiled his talogue, of the Flora of Nova Scotia. It may be mentioned that r. How's collection, which also formed part of the material from hich that catalogue was prepared, is also in the Museum. Dr. indsay's specimens will be mounted as soon as possible.

A small dredge for boat use has been obtained and will be operated xt summer, and doubtless will add many specimens of marine vertebrates to the Museum. A collection of Nova Scotian mollusca a disideratum at present and exertions must be made to secure one.

The collection of native birds is rapidly nearing a state of fair com- eteness. In the work of collecting for this department I have been sisted by Mr. R. W. Tufts, of Wolfville, Mr. E. C. Allen, of Acadia, rmouth Co., and others. Mr. Watson L. Bishop, of Dartmouth, s presented a collection of ninety-one birds' eggs with the fullest ientific data.

A series of regularly recorded observations on bird migration has en inaugurated with observers in various parts of the province, and mass of interesting material will ere long be at hand for those udying our avian fauna.

A large collection of Nova Scotian Lepidoptera has been promised, d a special case, with drawers, is being constructed for its reception. his collection will be arranged according to the "block system" of rof. Comstock, which is doubtless the most convenient for a growing llection. Mr. J. Perrin, of McNab's Island, and Miss L. C. Eaton, of ruro, has already donated a number of insects, and they and others ave promised further to assist as soon as an insect cabinet is ready.

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*It contains about 1397 specimens.

Cavanagh (J. H.), New Glasgow; Cope (Joseph); Cowie (Dr. A. J.); Creighton (Jermain).

Dimock (C. Henry), Windsor; Dunbar (John H.), Stellarton; Dunn (Wm. R.)

Eaton (Miss Lucy C.), Truro; Eagar (R. F.), Dartmouth.

Farquhar (Capt. Jas. A.); Ferguson (Wm. A., M. P. P.), Guysboro; Fraser (Capt. A.)

Gilpin (Alfred E.); Gilpin (Dr. E., Jr.); Gragg (Isaac P.), of C. B. Copper Co.

Haycock (Prof. Ernest), Wolfville; Heffler (Clifford E.); Herbin (F.), Wolfville; Hill, (T. Vardy).

Kennedy (Prof. G. T.), Windsor; Kitto (Victor), Ferrona; Kline (John).

Lewis & Sons (J.), Lewiston; Lindsay (Dr. A. W. H.)

Macdonald (Simon D.); McFarlane (J. F.), Ferrona; MacKay (Dr. A. H.); MacKenzie (Jas. W.); McLeod (R. R.), Brookfield; Mason (F. H.); Meteorological Office, Toronto; Michener (R.), Hantsport; Mines Department of N. S.; Morash (Charles), Cole Harbour.

Nisbet (Wm. C); Nova Scotian Institute of Science; Nova Scotia School of Horticulture, Wolfville; Nova Scotia Steel & Coal Co., Ferrona.

Oxford Manufacturing Co., Oxford.

Parker (W. A.), Shubenacadie; Patrick (Rev. Bro. A.); Pentz (F.), Hantsport; Perrin (J.), McNab's Island; Piers (Charles); Poole (Henry S.); Prest (Walter H.), Bedford; Prichard(Arthur Henry C.), Boston.

Reid (Frank H.), Middleton.

St. Croix Paper Co., Ltd.; Scott (Leonard), Gore; Sears (Prof. F. C.), Wolfville; Silver (Harold S.); Smith Bros.; Smith (Cyril E.); Smith (Walter); Sweet (Edward F.), Hantsport.

Taylor & Co. (R.); Tufts (Harold F.), Wolfville; Tufts (Robie W.), Wolfville.

Waddell (W. H.); Weatherbe (D'Arcy); Wilber & Son (N. B.), Elmsdale; Wilson & Son (A.); Wiltshire (Frank), Bedford; Windsor Plaster Co., Windsor; Woolaver (Miss L. R.); Working Men's Syndicate, New Glasgow.

Provincial Science Library.

Since my last report, the library of the Mining Society of Nova Scotia, consisting of mining and metallurgical periodicals, &c., has been removed to the Science Library and shelved. It consists of 176 volumes, bound, and about 177 pamphlets.

The mass of unsorted periodicals from the Institute of Science, which had accumulated at the librarian's office, and which was received after the main portion of the library had been shelved, has been sorted and shelved.

Publications—weekly, monthly or yearly—are now received from about 475 institutions devoted to pure science, agriculture, mining, civil, mechanical and electrical engineering, and commercial geography. During the year 26 new societies have been added to our list of donors for the future. Accurate figures as to the number of bound and unbound volumes in the library are not at hand, although a count will probably be made during the coming year. In 1899 the Institute of Science's Library alone was estimated to contain about 3,000 bound and unbound volumes, and the growth has been very rapid since then. About 900 volumes and 62 pamphlets were received from the Legislative Library, and 176 volumes and 177 pamphlets from the Mining Society, as before mentioned.

During the year a number of recently-published manuals and other works were purchased with funds supplied by the Government. These were carefully selected and should be of much use. The Mines Department and Dr. Gilpin have also furnished a number of books of recent date. The necessity for other comprehensive works of late date, is very great, and it is in this department the library most needs strengthening, as the works from the Legislative Library are mostly too old to be of much service in these days of rapid scientific advancement and improved methods. A number of mining works will probably be added during the coming year.

No binding has been done since the transfer of the library from the Institute of Science. Many volumes are complete and ready for the binder and should be bound during the coming year.

n books are about being prepared, as the very large
tions received of late years by the Institute of
he pages of the old ones to be in many cases over-
g these books, much advantageous rearrange-
suggested by experience in the past.

A loan book has been opened for the registration of books borrowed.

Tables and chairs have been placed in the reading-room since the last report, and the floor has been covered with oil-cloth.

As anticipated, the Library is being largely used by mining men, engineers, students and the general public.

The reading-room has been used twice a month by the Halifax Botanical Club, which has met there for the purpose of studying the plant life of the province.

The Library has been of very great use in connection with the work in the Museum, as an assistance in the study of the specimens and as a reference from the labels.

I have the honor to be, Sir,
Your most obedient servant,
HARRY PIERS,
Curator and Librarian.

I remain, Sir.
Your obedient servant,
E. GILPIN,
Deputy Commissioner and Inspector of Mines.

TABLES.

LIST OF MINERAL LEASES (OTHER THAN GOLD.)

IRON.

No. of Lease.	Name of Owner.	County	Agent or Owner.	Address.
232	Brookman, P	Cape Breton		
102	Smith, W	"		
103	McKenzie, H. R	"		
104	McKenzie, J. W	"		
258, 259, 260, 261	McPherson, M. A	"		
238	Matheson, A	"		
43, 44, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 87	Bartlett, J. H	Pictou		
68, 71, 83	Nova Scotia Steel & Coal Co	"		
67	Cameron, Nathan	"		
61	Cameron, J. A	"		
82	McMillan, J. R	"		
10	Fraser, W. J	Inverness		
57	Cape Breton Iron Co	"		
22	McMillan, J. R	"		
89	McKenzie, J. A	"		
99	Fraser, W. A	"		
5	McDougald, J	Antigonish		
7	McDonald, L	"		
8, 9, 10, 11	Cowlan, G. B	"		

243, 171, 174	Gorham, J. W	"		
211, 233, 236	Burchell, J. E	"		
215	McKinnon, D. L	"		
234	Ross, H	"		
186, 187, 202, 205, 206, 209	Kennelly, D. J	"		
210	Harold, T. C	"		
196, 237, 222	Routledge, T	"		
201, 221	Hickey, C	"		
192	McKenzie, J. A	"		
175	McDonald, J. W	"		
225	Cossitt, G. G	"		
167	Murray, J	"		
191, 197	McVicar, J	"		
229	Matheson, D	"		
218	Morrison, D	"		
217	Townshend, James	"		
248	McMillian, J	"		
275, 276	Petrie, L. A	"		
258, 259, 260, 261	McPherson, M. A	"		
1/13, 6/4, 7/10, 26, 29, 30, 111, 112, 113	Port Hood Coal Co	"		
251	Caldwell, T	"		
226	Stephen, A	"		
227	Johnson, J. A	"		
231	Owen, J. M	"		
7	Dominion Coal Coal Co	Victoria		
1/2	Burchell Bros	"	J. T. Burchell	N. Campbellton
8, 9	Fraser, J. W	Inverness		
11	Dawson, G	"		

LIST OF MINERAL LEASES (OTHER THAN GOLD.)—*(Continued.)*

COPPER, LEAD, ETC.

No. of Lease.	Name of Owner.	County.	Agent or Owner.	Address.
4	Cameron, J. J	Guysboro'		
	COAL.			
83, 84, 85	Barton, A. McG	Pictou		
3/1, $\frac{1}{28}$, $\frac{2}{42}$, 3, 4, 69	Acadia Coal Co	"		
5/12, $\frac{6}{13}$, $\frac{7}{14}$, 66, 90, 91, 92, 93	Intercolonial Co	"		
46, 8/6, 68, 70	Nova Scotia Steel & Coal Co	"		
86	Murray, S	"		
10/24	Richey, M. H	"		
11/11, 45, 9/10	Gray, B. G	"		
56, 22/51, 74, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104	Canada Coals & R'y. Co	Cumberland		
19/44, 55, $\frac{16}{8}$, $\frac{17}{7}$, $\frac{18}{58}$, $\frac{20}{52}$, $\frac{21}{55}$, 61, 62, 70, 71, 70, 71, 72, 73, 75, 76, 77, 78, 79, 81, 82, 83, 84, 85, 87, 88, 90, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 141, 118, 119, 120 121, 122, 123, 124, 89, 93, 60, 66, 67, 68, 69, 125a, 126, 128, 129, 135	Cumberland Rail'y. Coal Co.	"	J. R. Cowans.	Springhill.
8/5	Lawson Coal Rail'y. Co	"		

6/12	Robertson, Hugh	Cumberland		
15	Prospect Mining Co	"		
9/22, $\frac{10}{23}$, $\frac{11}{28}$, $\frac{12}{29}$, $\frac{13}{30}$	Styles Mining Co	"		
23/53	Binney, J. W	"		
57	Salt Springs Coal Co	"		
26/16	Minudie M. & T. C	"		
60, 61	Tupper, C. H	"		
105	Leckie, R. G	"		
94, 65	Faulkner, G. E	"		
80	Gue, T. R	"		
86	Rutherford, J	"		
91	Fraser, H. R	"		
131	Hickman, J. S	"		
34, 107, 134	Weatherbe, U. J	"		
106	Vroom, W. E	"		
125	Francklyn, Geo. E	"		
14	Joggins C. M. Association	"		
24/47, 25/9	Boston Coal Mg. Co	"		
94	Ripley, E	"		
"	Moore, R. G. M			
13/79, 1/27, 2, 3, 28, 29, 30	Nova Scotia Steel & Coal Co	Cape Breton		
173, 58/67	Weatherbe, R. L	"		
111, 164	Sydney Coal Co			
45/5, 46/28, 47/29, 50/40, 51/41, 52/42, 60/54, 61/55, 62/56, 63/57, 64/58, 65/59, 66/60, 67/61, 68/62, 69/63, 108, 109, 110, 188, 207, 140, 252, 253, 254, 255, 256, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 278, 279	Dominion Coal Co	Cape Breton	H. Donkin	Glace Bay

LIST OF MINERAL LEASES (OTHER THAN GOLD.)—(*Continued.*)

COAL—(*Continued*)

No. of Lease.	Name of Owner.	County.	Agent or Manager.	Address.
	Hamilton, A. G	Cape Breton		
	LeCras, Henry	"		
220, 214	Cayley, H. St. Q	"		
179, 180, 168, 190, 208, 223, 241	Roberts, F	"		
130	Mitchell, A. B	"		
212, 131, 128, 129, 134, 135, 136, 139, 144, 182, 200, 219	Moseley, E. T	"		
138, 149, 184, 224	White, A. J	"		
141, 177, 244, 213, 112, 113, 114, 115, 116	Cumberland Ry. & Coal Co	"		
235, 146, 193, 194, 216	Gowrie & Block House Collieries	"		
166	Dunn, J	"		
242	Can. Oil & Coal Co	"		
247	McNeil, H. F	"		
161	Routledge, T	"		
282	Moseley, E. W	"		
169, 170, 183	McVey, Jas	"		
178	Routledge, E	"		
165	Stephens, L. H	"		
163, 185	Hamilton, C. F	"		
199	Copeland, J. D	"		

243, 171, 174	Gorham, J. W	"		
211, 233, 236	Burchell, J. E	"		
215	McKinnon, D. L	"		
234	Ross, H	"		
186, 187, 202, 205, 206, 209	Kennelly, D. J	"		
210	Harold, T. C	"		
196, 237, 222	Routledge, T	"		
201, 221	Hickey, C	"		
192	McKenzie, J. A	"		
175	McDonald, J. W	"		
225	Cossitt, G. G	"		
167	Murray, J	"		
191, 197	McVicar, J	"		
229	Matheson, D	"		
218	Morrison, D	"		
217	Townshend, James	"		
248	McMillian, J	"		
275, 276	Petrie, L. A	"		
258, 259, 260, 261	McPherson, M. A	"		
1/13, 6/4, 7/10, 26, 29, 30, 111, 112, 113	Port Hood Coal Co	"		
251	Caldwell, T	"		
226	Stephen, A	"		
227	Johnson, J. A	"		
231	Owen, J. M	"		
7	Dominion Coal Coal Co	Victoria		
1/2	Burchell Bros	"	J. T. Burchell	N. Campbellton
8, 9	Fraser, J. W	Inverness		
1 1	Dawson, G	"		

LIST OF MINERAL LEASES (OTHER THAN GOLD.)—*Continued.*

COAL.—*Continued.*

No. of Lease.	Name of Owner.	County.	Agent or Owner.	Address.
, 15, 18, 19, 20, 23, 24, 25, 28, 41, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 60, 61, 100, 101, 104, 105	Inverness & Richmond Coll. and Rail'y. Co. Ltd.	Inverness		
3/11, 27	McKenzie & Mann	"		
29, 30	Tremaine, E. D	"		
35, 38, 39	Ross, W	"		
43, 44	Farquhar, J. A	"		
31	Sutherland, W. A	"		
32, 33, 84, 42	Wallace, T. A	"		
63, 64, 65, 96, 97, 98	Taylor, Ira	"		
66, 108, 109	Lithgow J. R	"		
67, 68	McDonald, W. B	"		
69	McInnes, H	"		
70, 71, 72, 77, 78, 79, 80	Roche, Wm	"		
73, 74, 75, 76	Townshend, S	"		
81, 110	Caldwell, T	"		
82, 83, 84, 85, 86, 87, 88	Andrews, J. W	"		
89, 90, 91, 92, 93, 94, 95	Sherman, C. E	"		
106, 107, 114, 115, 116, 117, 118, 119, 120, 121	Mabou Coal Mg. Co	"		

	Terminal City Co.	Richmond.		
	Columbia Coal Co.	"		
	Reynolds, W. K.	"		
	Chisholm, W.	"		
9	Lennoxville T. & C. Co.	"		
	Eastern Dev. Co.	"		
13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33.	H. Pearl	"		

COAL—SALES.

NAMES.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	Year 1901.	Year 1900.
NOVA SCOTIA:						
Land Sales ...	99,843	210,212	96,479	78,606	485,140	379,205
Sea Borne....	96,974	29,020	151,698	235,982	513,674	484,695
Total N. S....	196,817	239,232	248,177	314.588	998,814	863,900
New Brunswick.	109,136	92,713	88,252	59,893	349,994	406,519
Newfoundland ..	28,018	24,496	22,680	30,426	105,620	99.307
P. E. Island.....	1,279	....	20,423	32 071	53,773	68,103
Quebec.........	32,770	109,022	415,998	459,256	1,017,046	934,229
West Indies	....	....	....	....	....	....
United States...	188,619	138,959	129,326	133,183	590,086	624,273
Other Countries.	....	....	....	4,002	4,002	1,215
Total	556,638	604.422	924,856	1,033,419	3,119,335	2.997,546

COAL—GENERAL STATEMENT.

1901.	Production.	Colliery Consumption.	Sales.
1st Quarter........................	764,971	56,149	556,638
2nd "	810,993	77.745	604,422
3rd "	1,040,230	76,528	924 856
4th "	1,009,171	66,234	1,033,419
Total..............	3,625,365	278,207	3,119,335

COAL PRODUCE OF NOVA SCOTIA FOR YEAR ENDED SEPTEMBER 30, 1901.

COLLIERY.	Produce.	Sales.	Colliery Consumption.	
			Engines.	Workmen.
Joggins	66,065	53,352	8,401	1,646
Jubilee	500	463	30	7
Scotia	1,221	1,052	....	50
Springhill	410,440	359,603	31,125	14,871
Acadia	271,145	229,431	32,305	5,888
Intercolonial	219,023	191,482	15,037	3,570
Dominion	2,352,567	2,055,599	107,460	27,250
N. S. S. & C. Co	238,646	184,303	14,188	8,202
Gowrie & B. House	16,681	12,310	2,372	808
Sydney Coal Co	11,040	8,743	172	155
New Campbellton	14,771	11,309	1,702	960
Broad Cove	56	....	28	....
Mabou	1,028	852	5	10
Pt. Hood	22,182	10,836	1,517	448
	3,625,365	3,119,335	214 342	63,865

*Pictou Co.

TABLE A.—COAL TRADE BY COUNTIES FOR THE YEAR ENDED SEPTEMBER 30TH, 1901.

	CUMBERLAND.		PICTOU.		CAPE BRETON.		OTHER COUNTIES.		TOTAL.	
	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.
1st Quarter	132838	120939	133317	110842	492993	320217	5823	4640	764971	556638
2nd "	126420	107020	119438	93836	564267	403283	868	283	810993	604422
3rd "	127283	106450	132102	118627	762674	695036	18171	4743	1040230	924856
4th "	91685	80061	105311	97608	799000	842419	13175	13331	1009171	1033419
Total	478226	414470	490168	420913	2618934	2260955	38037	22997	3625365	3119335

TABLE B.—COAL TRADE BY COUNTIES.

	CUMBERLAND.	PICTOU.	CAPE BRETON.	OTHER COUNTIES.	TOTAL.
Nova Scotia:					
By Land	111277	212283	158800	2780	485140
By Sea		29963	472335	11376	513674
Total	111277	242246	631135	14156	998814
New Brunswick	234866	53936	60571	621	349994
Newfoundland		12	102961	2647	105620
Prince Edward Island		21476	28336	3961	53773
Quebec	56780	103243	855411	1612	1017046
West Indies					
United States	11547		578539		590086
Other Counties			4002		4002
Total	414470	420913	2260955	22997	3119335

ent of Persons Employed in each Coal Mine during the year ended September 30th, 1901.

Colliery.	Underground.				Above Ground.				Construction.				Total.		Horses.		Pits Worke
	Skilled Labor.	Laborers	Boys.	Days' Labor.	Skilled Labor.	Laborers	Boys.	Days' Labor.	Skilled Labor.	Laborers	Boys.	Days' Labor.	Persons.	Days' Labor.	Above.	Below.	Days.
Joggins	72	99	18	44269	9	71	9	20895	....	....	..	......	278	65164	4	8	235
Springhill	503	411	134	234123	106	209	43	77212	......	...	....	......	1406	311335	21	44	229
Acadia	252	286	62	143652	60	164	33	70437	.....	....	....	......	857	214089	17	32	279
International	221	155	97	116645	45	98	26	48054	1	2	....	761	645	165460	12	26	272
†N. S. S. & C. Co	4	7	..	859	2	17	....	6677	......	...	....	....	30	7536	....	....	....
Dominion	1114	1402	180	770871	251	456	65	229723	7	....	....	1284	3475	1001878	40	312	300
‡N. S. S. & C. Co	301	81	80	136020	80	127	32	68726	......	....	....	......	701	204746	10	55	295
Sydney Coal Co	22	11	.	7017	2	4	....	1923	......	....	....	......	39	8940	1	....	238
Port Hood	32	49	4	15816	3	34	2	8712	45	....	....	7560	169	32088	5	3	290
New Campbelton	21	15	5	11984	3	5	2	3090	......	...	....	....	51	15074	2	....	299
Mabou	3	3	....	365	2	2	..	137	2	....	....	216	12	718	....	.	90
Total	2545	2519	580	1481721	563	1187	212	535586	55	2	...	9821	7663	2027028	112	480	2518

†Pictou Co. ‡Sydney Mines.

GENERAL GOLD STATEMENT.

Year ending September 30th, 1901.

District.	Tons Crushed.	Total Yield of Gold.			Average Yield of Gold Per Ton.		
		Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.
Stormont	30228	5139	17	....	....	3	10
Sherbrooke	16503	3114	6	21	....	3	18
Renfrew	751	3358	5	6	4	9	10
Wine Harbor	4196	1362	4	12	....	6	12
North Brookfield	7709	3253	10	....	....	8	11
Waverly	8908	2903	4	14	....	6	12
Leipsigate	819	423	12	5	....	10	8
Harrigan Cove	3071	2628	9	....	....	17	3
Caribou	6893	2341	5	6	....	6	19
Oldham	779	439	11	16	....	11	5
Lake Catcha	1779	969	16	21	....	10	20
Blockhouse	465	808	....	....	1	14	18
Montague	595	437	15	2	....	14	17
Uniacke	748	874	9	....	1	3	9
Mills' Village	1057	742	....	....	....	14	1
Tangier	936	436	10	....	....	9	8
Malaga	173	226	17	....	1	6	5
Other Districts	2382	1077	9	17	....	9	1
Total	87992	30537	4	0	....	6	22

PRODUCTION OF GOLD FROM 1862 TO 1901.

District.	Tons Crushed.	Total Yield of Gold.			Average Yield of Gold Per Ton.			Value at $19.00 Per oz.
		Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.	$
Caribou and Moose River	132649	44432	12	....	....	6	17	844220
Montague	26890	41149	14	14	1	10	13	781845
Oldham	49224	52948	2	16	....	1	13	1006016
Renfrew	49352	41678	9	6	....	16	21	791891
Sherbrooke	244187	141896	3	6	....	11	14	2696027
Stormont	208909	72596	13	3	....	6	23	1379337
Tangier	47874	23268	4	15	....	9	17	442097
Uniacke	55298	39476	15	2	....	14	7	750059
Waverley	135428	64960	12	9	....	9	14	1234252
Brookfield	51684	24353	7	22	....	9	10	462715
Salmon River	117175	41487	5	20	....	7	2	788259
Whiteburn	6394	9554	17	18	1	9	21	181544
Lake Catcha	24857	25146	5	2	1	0	6	477779
Rawdon	12178	9594	15	10	....	15	18	182302
Wine Harbour	54586	28829	12	14	....	10	14	547764
Fifteen Mile Stream	32893	16403	9	5	....	9	23	311666
Malaga	20590	18910	12	7	....	18	9	359302
Other Districts	88696	54577	15	22	....	12	7	1036979
Total	1358864	751265	18	23	....	11	1	14274054

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.

MONTH.	STORMONT.					SHERBROOKE.				
	No. of Mines.	Tons Crushed.	YIELD OF GOLD.			No. of Mines.	Tons Crushed.	YIELD OF GOLD.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October	3	2765	396	10	....	1	600	190	....	....
November	3	3226	596	11	....	2	1596	236	3	....
December	2	2580	380	....	....	3	1683	319	5	....
January	2	2112	292	18	....	2	1645	333	3	21
February	1	1766	230	....	....	2	1400	341	9	....
March	3	2716	428	11	....	2	1156	331	6	....
April	2	2675	385	....	....	1	963	272	....	....
May	3	2735	498	3	....	2	1599	281	5	....
June	3	2122	344	10	....	2	1708	203	5	....
July	3	2539	401	19	....	2	1413	251	10	....
August	3	2498	569	....	....	1	1290	190	....	....
September	2	2494	616	15	....	1	1450	165	....	....
Total	......	30228	5139	17	....	......	16503	3114	6	21

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.—*(Continued.)*

MONTH.	RENFREW.					WINE HARBOR.				
	No. of Mines.	Tons Crushed.	YIELD OF GOLD.			No. of Mines.	Tons Crushed.	YIELD OF GOLD.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October	.....	.....	....	....	....	2	485	182	10	....
November	2	150	733	4	6	2	553	175	18	....
December	1	50	85	....	....	2	428	163	8	....
January	2	110	1121	....	....	2	420	164	15	....
February	.....	.....	....	....	....	2	440	121	2	12
March	1	55	709	....	....	2	500	138	14	....
April	1	206	371	18	....	1	240	12	11	....
May	.....	120	291	....	....	1	260	112	....	....
June	.....	.....	....	....	....	1	280	83	6	....
July	.....	.....	....	....	....	1	290	93	....	....
August	1	60	47	3	....	1	300	115	....	....
September	.....	.....	....	....	....	.....	.....	....	....	....
Total	.....	751	3358	5	6	....	4196	1362	4	12

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	LEIPSIGATE.					HARRIGAN COVE.				
	No. of Mines.	Tons Crushed.	Yield of Gold.			No. of Mines.	Tons Crushed.	Yield of Gold.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October	1	50	30	5	....	1	264	185	....	....
November	....	....	....	....	....	1	227	201	9	....
December	1	52	31	15	....	1	196	202	5	....
January	1	95	40	5	....	2	265	231	14	....
February					....	1	217	245	2	....
March					....	2	200	195	....	....
April	....	....	....	....	....	2	312	240	17	....
May	....	....	....	....	....	2	312	234	3	....
June	1	76	43	14	....	1	246	252	....	....
July	1	180	103	....	....	2	316	240	10	....
August	1	151	75	3	5	1	234	233	9	....
September	1	215	99	10	....	1	282	167	....	....
Total	....	819	423	12	5	....	3071	2628	9	....

MONTHLY STATEMENT OF EACH GOLD DISTRICT.—*(Continued.)*

MONTH.	North Brookfield.					Waverly.				
	No. of Mines.	Tons Crushed.	Yield of Gold.			No. of Mines.	Tons Crushed.	Yield of Gold.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October	1	683	346	18	....	1	514	190	10	4
November	1	729	417	10	....	2	446	262	....	9
December	1	729	407	....	....	1	1164	468	7	13
January	1	424	230	4	....	1	638	260	2	....
February	1	666	341	10	....	2	1509	436	11	18
March	1	463	149	4	....	1	1020	272	18	9
April	1	868	235	....	....	1	493	178	16	9
May	1	640	187	1	....	2	524	155	10	....
June	1	750	237	8	....	2	1015	279	12	....
July	1	622	295	11	....	1	528	103	....	....
August	1	490	176	3	....	1	1057	295	16	....
September	1	645	230	1	....	......	......	......	....	....
Total	.....	7709	3253	10	....	......	8908	2903	4	14

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.—*(Continued.)*

MONTH.	CARIBOU.					OLDHAM.				
	No. of Mines.	Tons Crushed.	YIELD OF GOLD.			No. of Mines	Tons. Crushed.	YIELD OF GOLD.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October	5	526	169	3	18	2	121	54	9	22
November	4	730	250	6	....	2	114	79	15	3
December	4	951	370	18	....	2	98	50	18	8
January	3	586	202	19	....					
February	1	213	99	8	....		No	Crushing.		
March	2	774	254	10	....					
April	2	489	187	3	....	1	140	36	14	....
May	4	886	219	12	14	1	98	63	13	....
June	4	777	219	19	4	2	68	47	15	15
July	3	717	109	13	12	......	......	....	....	....
August	2	125	11	....	....	2	76	52	7	16
September	2	119	246	12	6	1	64	53	18	....
Total	......	6893	2341	5	6	......	779	439	11	16

MONTHLY STATEMENT OF EACH GOLD DISTRICT.—*(Continued.)*

MONTH.	Lake Catcha.					Blockhouse.				
	No. of Mines.	Tons Crushed.	Yield of Gold.			No. of Mines.	Tons Crushed.	Yield of Gold.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October	1	79	85	9	....	......	......	....	....	....
November	1	112	63	10	....	......	......	....	....	....
December	1	70	32	10	....	......	......	....	....	....
January	3	115	59	17	....					
February	2	160	114	14	19	1	230	463	....	....
March	2	189	102	15	6					
April	2	130	95	17	1					
May	2	184	78	11	11					
June	2	211	92	12	4					
July	2	162	82	4	4	1	235	345	....	....
August	2	189	85	5	....					
September	2	178	76	11	....					
Total	.....	1779	969	16	21	.....	465	808		....

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	Montague.					Uniacke.				
	No. of Mines.	Tons Crushed.	Yield of Gold.			No. of Mines.	Tons. Crushed.	Yield of Gold.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October	Chiefly Tributers.	165	54	....	17	1	Not Given	96	16	....
November		79	32	9	12	......	......	....	....	....
December		64	99	15	6	1	40	51	10	....
January		......	1	19	....	1	80	94	4	....
February		14	7	....	12	1	85	113	12	....
March		60	52	12	....	2	181	208	7	....
April		36	72	16	....	......	......	....	....	....
May		62	21	4	12	2	88	64	16	....
June	......	41	48	....	....	......	......	....	....	....
July	......	25	10	12	....	2	248	170	12	....
August	......	7	9	15	15	......	......	....	....	....
September	......	42	27	10	....	1	26	74	12	....
Total	......	595	437	15	2	......	748	874	9	

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.—*(Continued.)*

MONTH.	Mill Village.					Tangier.				
	No. of Mines.	Tons Crushed.	Yield of Gold.			No. of Mines.	Tons Crushed.	Yield of Gold		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October	1	104	54	....	....	1	400	235	5	....
November	1	98	52	....	....	....	....	....	....	....
December	1	103	116	....	....	....	....	....	....	....
January	1	118	96	....	....	....	....	....	....	....
February	1	114	60	....	....	....	....	....	....	....
March	1	104	60	....	....	....	....	....	....	....
April	1	142	75	....	....	....	....	....	....	....
May	1	109	140	....	....	....	....	....	....	....
June	1	63	37	....	....	1	143	72	10	....
July	1	52	29	....	....	1	208	88	5	....
August	1	50	23	....	....	....	....	....	....	....
September	....	....	....	....	....	1	185	40	10	....
Total	......	1057	742	....	....	......	936	436	10	....

MONTHLY STATEMENT OF EACH GOLD DISTRICT.—*(Continued.)*

MONTH.	MALAGA.					OTHER DISTRICTS.				
	No. of Mines.	Tons Crushed.	YIELD OF GOLD.			No. of Mines.	Tons Crushed.	YIELD OF GOLD.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October	.....	.....	....	....	....	7	1306	230	18	5
November	.....	.....	....	....	....	5	192	54	8	20
December	.....	.....	....	....	....	5	324	78	18	13
January	.....	.....	....	....	....	1	15	13	3	8
February	.....	.....	....	....	....	2	95	42	4	23
March	.....	.....	....	....	....	1	19	7	....	....
April	1	15	30	16	....	1	7	12	19	18
May	1	13	12	15	....	1	20	2	....	....
June	1	57	80	5	....	2	7	4	19	5
July	1	29	15	....	....	4	59	45	17	21
August	1	38	55	5	....	1	160	52	5	....
September	1	21	32	16	....	3	178	532	14	....
Total	.....	173	226	17	....	.....	2382	1077	9	17

INTERCOLONIAL RAILWAY.

g the various kinds of Coal (in tons) received from the different Mines in Nova Scotia for the of the Intercolonial Railway, from the 1st of October, 1900, to 30th September, 1901.

MONTH.	Consolidated Scotia Company, (Geo. J. Harrison.)		River Hebert Coal Co., R. S. Hibbard		Canada Coals and Railway Co., (Joggins.)			Cumberland Railway and Coal Company, (Springhill.)				Acadia Coal Co. Acadia, Albion and Vale.			Inter-colonial Coal Co. Drummond.	Dominion Coal Co Cape Breton.	Nova Scotia Steel & Coal Co G. M. A.	Port Hood Coal Co.	Bread Cove Mines, I. and R. Ry.	Mic-Mac Mining Co.
	Round.	Slack.	Round.	Slack.	Round.	Run of Mine.	Slack.	Round.	Run of Mine.	Slack.	Culm.	Round.	Blacksmith.	Coke.	Round	Round.	Round.	Round.	Round.	
1900.																				
October	.....	.....	20	.....	3031	416	.....	6159	6067	401	20	4818	124	.....	1787	3236	473	.....	.....	.....
November	41	.....	180	19	2662	17	.....	3995	7632	.....	29	4546	56	12	2146	2680	482	.....	.....	.....
December	.....	.....	131	24	2312	125	.....	10582	2585	58	.....	5089	116	.....	3522	4203	1568	40		
1901.																				
January	34	.....	211	.....	3766	217	.....	11857	263	.....	.....	5785	39	.....	3648	4877	608	.....	.....	.....
February	113	.....	356	56	1521	.....	.	9358	.....	.....	.....	4579	162	.....	2934	4043	740	30	.....	.....
March	262	.....	631	.....	3492	43	.....	8706	.....	.....	.....	4783	81	.....	2766	5648	720	204	.....	.....
April	247	21	349	.....	3932	.....	.....	13572	.....	.....	.....	6082	43	12	6105	5953	347	.....	.....	.....
May	107	.....	513	40	3434	.....	.....	12206	.....	.....	.....	11185	82	.....	4034	6173	164	.....	.....	.....
June	103	.....	592	60	2900	.....	201	11171	19	.....	.....	8155	94	.....	5937	11497	66	.....	.....	41
July	.....	.....	.....	.....	.....	.....	.....	84	.....	.....	.....	1584	64	.....	100	3862	.....	.....	.....	.....
August	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1457	15	.....	.....	10992	18	.....	119	.....
September	.....	.....	668	.....	877	.....	.....	8957	.....	.....	.....	5316	58	.....	1423	5925	20	.....	.....	.....
	907	21	3651	199	27927	818	201	96647	16566	459	49	63379	934	24	34402	69089	5206	274	119	41

INTERCOLONIAL RAILWAY.

Statement showing the number of Tons of Coal received at the following Stations from Mines in Nova Scotia during year ended 30th September, 1901.

Destination.	Tons.	Destination.	Tons.
Halifax	62,396	*Brought forward*	307,476
Dartmouth	29,408	Bayfield Road	46
Waverley	532	Tracadie	34
Bedford	809	Harbour au Bouche	116
Windsor Junction	17,325	Mulgrave	708
Wellington	21	Hastings	7
Enfield	135	Point Tupper	255
Elmsdale	597	McIntyres Lake	26
Milford	48	Orangedale	216
Shubenacadie	317	Iona	41
Stewiacke	678	Grand Narrows	219
Brookfield	169	North Sydney	122
Truro	12,629	Sydney	130
Valley	7	Belmont	7
West River	34	BeBert	7
Glengarry	42	East Mines	51
Hopewell	1,326	Londonderry	1,768
Ferrona Junction	71,887	Thomson	8
Stellarton	9,604	Oxford	792
Sylvester's	562	Pugwash Junction	447
New Glasgow	7,368	Pugwash	1,268
Trenton	58,917	Wallace Bridge	12
Pictou Landing	29,589	Wallace	432
Merigomish	136	Malagash	89
Avondale	49	Tatamagouche	475
Antigonish	2,825	Denmark	65
South River	18	River John	439
Pomquet	20	Meadowville	24
Heatherton	28	Scotsburn	319
Carried forward	307,476	*Carried forward*	315,599

INTERCOLONIAL RAILWAY—*(Continued.)*

Destination.	Tons.
Brought forward	315,599
Pictou	10,992
Spring Hill Junction	21
Nappan	22
Amherst	14,759
Aulac	230
Sackville	4,136
Dorchester	1,417
College Bridge	14
Memramcook	395
Pansec Junction	7
Shediac	826
Point du Chene	95
Moncton	14,246
Salisbury	2,449
Petitcodiac	441
Penobsquis	15
Sussex	885
Norton	42
Hampton	2,210
Nauwigewauk	7
Rothesay	70
St. John	59,932
Kent Junction	764
Rogersville	47
Chatham Junction	10,735
Millerton	143
Derby Junction	17
New Castle	45
Gloucester Junction	1,504
Bathurst	64
New Mills	34
Carried forward	435,163

Destination.	Tons.
Brought forward	435,163
Charlo	19
Cold Brook	806
Dalhousie Junction	44
Dalhousie	38
Campbellton	113
Metapedia	2,570
Amqui	28
Cedar Hall	18
St. Amaclet	30
Bic	11
Riviere du Loup	4,029
St. Paschal	43
St. Henri Junction	20,612
Chaudiere Junction	16
Levis	1,108
Kingsburg Junction	223
St. Hyacinthe	134
St. Madeline	56
Beloeil	115
St. Lambert	85
Montreal	27,316
G.T.R. via Chaudiere	1,170
" " Ste. Rosaile	34
C. P. R. " "	132
Total	493,913

SUMMARY.

FROM.	TONS.
Stellarton	198,659
Westville	22,213
New Glasgow	23,180
Albion	24,306
North Sydney	57,901
Sydney	10,143
Springhill	134,036
Maccan	23,375
Total	493,913

CUSTOMS CANADIAN.

PORT OF WINDSOR, N. S., 1901.

Memo Exports of the Mine and Quarry from the Port of Windsor, including Outports from 30th September, 1900, to 30th September, 1901.

	TONS.	VALUE.
Gypsum	128,637	$112,278 00
Moulding Sand	320	1,280 00
Manganese	5	400 00

REPORT

OF THE

DEPARTMENT OF MINES,

NOVA SCOTIA,

For the Year ending 30th September, 1902.

HALIFAX, N. S.:
COMMISSIONER OF PUBLIC WORKS AND MINES, KING'S PRINTER.
1903.

Holloway Bros., Printers, 69 & 71 Granville St.

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6 JUNE 1910

DEPARTMENT OF MINES.

REPORT FOR THE YEAR ENDED SEPTEMBER 30, 1902.

To His Honour THE HONOURABLE ALFRED GILPIN JONES,
Member of the King's Privy Council for Canada,
Lieutenant-Governor of Nova Scotia, &c., &c.

MAY IT PLEASE YOUR HONOUR,—

I respectfully present herewith to Your Honour the Annual Report of the Inspector of Mines, containing an account of the progress of mining operations, together with statistical information compiled by him from official and other returns.

I am,

Your Honour's obedient servant,

A. DRYSDALE,
Commissioner of Public Works and Mines.

HALIFAX, January 2nd, 1903.

REPORT

ON THE

ERRATUM, p. 3.

Production of Barytes during year 1902 should be 742 tons.

Moulding Sand.............	"		1,390

* Including imported ore, 474,517 tons.
† Ton of 2,240 lbs.
‡ Amount exported.

NOTE—Further details will be found in the tables at end of report.

REPORT

ON THE

MINES OF NOVA SCOTIA.

By EDWIN GILPIN, Jr., A.M., LLD.

FELLOW OF THE ROYAL SOCIETY OF CANADA, ETC., ETC.

Office of Inspector of Mines,
Halifax, December 28th, 1902.

To the Honourable A. Drysdale, M.P.P., M.E.C.,
Commissioner of Public Works and Mines:—

Sir,—I beg leave to submit the following report on the Mines of Nova Scotia.

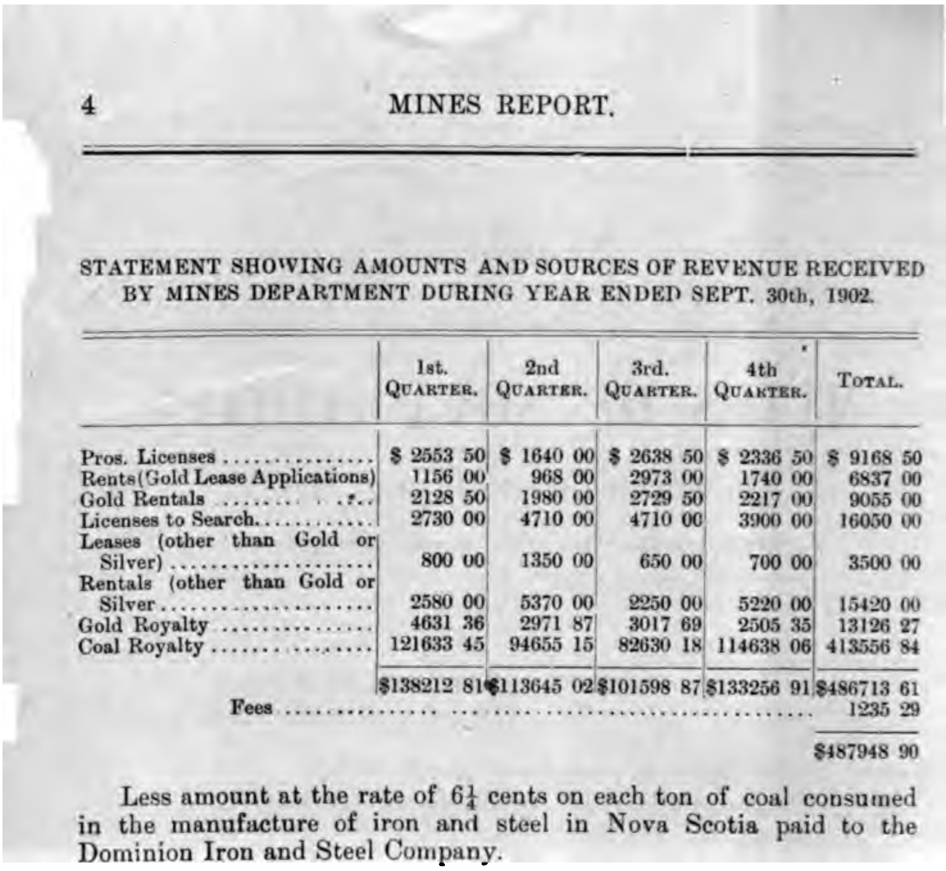
The following summary shows, so far as I have been able to learn, the mineral production of Nova Scotia for the year ending September 30th, compared with that for the year ending September 30th, 1901.

		Year ending Sept. 30, 1901.	Year ending Sept. 30, 1902.
Gold	oz	30,537	28,279
Iron Ore*	Tons	419,567	489,731
Manganese Ors†	"	10	150
Coal raised†	"	3.625,365	4,362,869
Coke made†	"	120,000	406,152
Gypsum†‡	"	135,637	173,000
Grindstones, etc.	"	315	4,000
Limestone†	"	95,794	223.606
Barytes	"	600	~~550~~ → 74
Pig Iron	"	90,034	206,193
Moulding Sand	"		1,390

---

* Including imported ore, 474,517 tons.
† Ton of 2,240 lbs.
‡ Amount exported.

Note—Further details will be found in the tables at end of report.



STATEMENT SHOWING AMOUNTS AND SOURCES OF REVENUE RECEIVED BY MINES DEPARTMENT DURING YEAR ENDED SEPT. 30th, 1902.

	1st. QUARTER.	2nd QUARTER.	3rd. QUARTER.	4th QUARTER.	TOTAL.
Pros. Licenses	$ 2553 50	$ 1640 00	$ 2638 50	$ 2336 50	$ 9168 50
Rents(Gold Lease Applications)	1156 00	968 00	2973 00	1740 00	6837 00
Gold Rentals	2128 50	1980 00	2729 50	2217 00	9055 00
Licenses to Search	2730 00	4710 00	4710 00	3900 00	16050 00
Leases (other than Gold or Silver)	800 00	1350 00	650 00	700 00	3500 00
Rentals (other than Gold or Silver	2580 00	5370 00	2250 00	5220 00	15420 00
Gold Royalty	4631 36	2971 87	3017 69	2505 35	13126 27
Coal Royalty	121633 45	94655 15	82630 18	114638 06	413556 84
	$138212 81	$113645 02	$101598 87	$133256 91	$486713 61
Fees					1235 29
					$487948 90

Less amount at the rate of 6¼ cents on each ton of coal consumed in the manufacture of iron and steel in Nova Scotia paid to the Dominion Iron and Steel Company.

October 24th, 1901	$ 4869 23
March 31st, 1902	7435 74
April 24th, 1902	7350 88
	$19655 85

During the past year surveys were made in a number of the gold districts. Mr. R. W. McKenzie surveyed a number of coal leases in Cape Breton County, and Mr. F. W. Christie began a systematic survey of the coal leases in the Chimney Corner district.

The collection of minerals for the Paris Exhibition has been utilised at a number of local exhibitions and is now deposited in the Canadian Department of the Imperial Institute with the exception of some of the gold specimens which will shortly be returned.

Work has been continued in the Provincial Museum, and it is assuming as rapidly as possible its ultimate design as a collection representing the natural resources, etc., of the Province.

The Science Library has been enriched by numerous books during the past year. A report on the Library and Museum will be appended.

The usual schools for candidates for certificates in Coal Mining and as Enginemen were held during the summer and the following andidates received certificates:

ENGINEMEN'S CERTIFICATES GRANTED, 1902.

No.	NAME.	ADDRESS.	CLASS.
135A	Philip E. Smith	Port Morien	First Class.
136	Henry Court	Westville	Second.
137	Jediska Bowlsby	Joggins	"
138	Willard Mills	"	"
139	Geo. J. McAulay	Port Morien	"
140	Bonsfield Allison Leonard	Whitney Pier	"
141	Gus. W. McAulay	Port Morien	"
142	Robt. Swetman	Joggins	Third
143	Alex Skinner	Westville	"
144	Robt. Augevine	Six Mile Rd., Cumb. Co.	"
145	John R. McDonald	Coalburn, Pictou Co.	"
146	Wm. J Moffatt	River Hebert	"
147	Hugh McDougall	Stellarton	"
148	John Henderson	Westville	"
149	Harry W. Martin	West River Hebert	"
150	Malcolm McNeil Smythe	Port Hood	"
151	William McInnes	Glace Bay	"
152	Alonzo Johnson	Joggins	"
153	Daniel Brothers	North Sydney	"
154	Arthur A. Shearer	Glace Bay	"
155	Hilary Brown	"	"
156	John D. Fraser	Sydney	"
157	Donald J. Gillis	Glace Bay	"
158	William D. Hale	Dominion, No. 1	"
159	Garnet Burchell	Bridgeport	"
160	John McWatt	Glace Bay	"
161	John D. Morrison	Dominion, No. 1	"
162	Murdoch Robertson	Glace Bay	"
163	Granville Dryden	Westville	"
164	Colin McGillivray	New Glasgow	"
165	Murdoch McKenzie	Westville	"
166	Willard M. Walters	"	"
167	John A. McDonald	Port Hood	"
168	John McGregor	Coalburn	"
169	John Young	Port Hood	"
170	James A. Fraser	Stellarton	"
171	John W. McIssac	Broad Cove Mines	"
172	William Ruwan	Stellarton	"
173	James Mitchell	"	"
174	Rory McIsaac	Broad Cove Mines	"
175	John Clifton	Thorburn	"

ENGINEMEN'S CERTIFICATES GRANTED. 1902.—*Continued.*

No.	Name.	Address.	Class.
176	Warren E. Reynolds	Stellarton	Thirp.
177	Cameron Johnson	Port Hood	"
178	Frank Aldred	Dominion, No. 2	"
179	Walter Miller	Westville	"
180	Duncan McDonald	Pcrt Morien	"

MINE OFFICIALS CERTIFICATES GRANTED, 1902.

No.	Name.	Address.	Grade.
200A	D. L. McKay	Reserve Mines	Und. Manager.
201A	Angus Munro	"	"
202A	Neil A. McKenzie	"	"
203A	William Tobin	Sydney Mines	"
204A	Malcolm Beaton	Dominion No. 1	"
205A	Andrew Irvine	Glace Bay	"
206A	John D. McDonald	Dominion No. 1	"
207A	John Allan McDonald	Dominion No. 3	"
208A	D. H. Holland	Broad Cove Mines	"
209A	J. R. McDonald	Thorburne	"
210A	Evett Sutherland	Westville	"
211A	Alonzo Gratto	"	"
212A	W. B. Muirhead	"	"
213A	Robert Henderson	"	"
214A	Robert H. Gray	"	"
215A	John Brace	Springhill	"
216A	Jas. E. McPherson	"	"
217A	J. W. Schurman	"	"
218A	Wm. A. McPherson	"	"
219A	James Scott	"	"
220A	Joseph Moss	"	"
221A	Duncan Blue	"	"
222A	Peter Murphy	Joggins	"
223A	Alex. Stewart	"	"
224A	Alex. Liddle	"	"
209B	Fred Jesso	Glace Bay	Overman.

MINE OFFICIALS CERTIFICATES GRANTED, 1902.—*Continued.*

No.	NAME.	ADDRESS.	GRADE.
210B	John C. McNeil	Glace Bay	Overman.
211B	Wm. B. Scott	"	"
212B	Jas. Anderson	Dominion No. 4	"
213B	Robt. Lorimer	Caledonia	"
214B	Alex. McDonald	Sydney Mines	"
215B	Rory J. McNeil		
216B	John Caldwell	Dominion No. 1	"
217B	Michael McLeod	Caledonia	"
218B	John E. Fortune	Bridgeport	"
219B	J. R. McNeil	Dominion No. 1	"
220B	John D. Johnson	Caledonia	"
221B	J. D. Colburne	Sydney Mines	"
222B	W. E. Paton	Dominion No. 3	"
223B	G. B. Burchell	New Campbellton.	"
224B	H. A. McLeod	Broad Cove Mines.	"
225B	Samuel Beaton	"	"
226B	Edw. D. McKenzie	Port Hood	"
227B	John Young	"	"
228B	Fraser A. McKay	Thorborn	"
229B	Angus McIntosh	"	"
230B	Donald Fraser	"	"
231B	A. D. Fraser McKay	"	"
232B	Kenneth Cameron	"	"
233B	Geo. H. Sutherland	"	"
234B	Joseph Reid	Westville	"
235B	Henry Henderson	"	"
236B	G. Roach McKay	Springhill	"
237B	John R. Cameron	"	"
238B	Chas. Rent	"	"
239B	Geo. R. McPherson	"	"
240B	Angus McDonald	Glace Bay	"
53C	D. H. Ferguson	Caledonia	Manager.
54C	John McDonald	Port Morien	"
55C	Simon Lott	Glace Bay	"
56C	John W. Devison	"	"
57C	Richard Wilton	Caledonia	"
58C	Thomas Bown	Port Morien	"

The drills have been kept in use in various parts of the province and fuller details will be given separately.

COAL TRADE.

The returns of coal sold during the year 1902 show, when compared with those of the year 1901, as follows:

	1901.	1902.
Nova Scotia	998,814	1,382,563
New Brunswick	349,994	319,338
P. E. Island	53,773	56,203
Newfoundland	105,620	105,287
Quebec	1,017,046	1,243,980
West Indies	....	5,982
United States	590,086	751,382
Other Countries	4,002	33,891
	3,119,335	3,898,626

The production was 4,366,869 tons compared with 3,625,365 tons in 1901.

The sales in Nova Scotia showed an increase of 383,749 tons, due principally to the requirements of the Dominion Iron and Steel Company, which drew its supply for coke and other purposes from the Dominion Coal Company. The sales to New Brunswick showed a slight decrease. The exports to Newfoundland and Prince Edward Island remained stationary. The sales to Quebec increased by nearly a quarter of a million tons. The sales to the United States showed an increase of about 200,000 tons.

CUMBERLAND COUNTY.

During the year the production was 544,917 tons, compared with 478,226 tons in 1901. The Springhill Collieries raised 480,676 tons, and the Joggins Mines raised 58,027 tons. The balance was produced by the smaller mines.

PICTOU COUNTY.

This County produced last year 515,603 tons against 490,168 tons in 1901. The Acadia Company raised 286,582 tons and the Intercolonial Company raised 206,599 tons. The Marsh Colliery of the a Scotia Steel and Coal Company is now in good working order roduced 22,422 tons.

The following report by Mr. A. V. Cameron, Deputy Inspector of Mines, will give details of the operations at the several collieries in Pictou and Cumberland Counties during the past year.

SPRINGHILL, Oct. 4th, 1902.

E. GILPIN, ESQ.,

Deputy Commissioner and Inspector of Mines.

SIR,—I have the honor to submit to you herewith a report on the various mines in the districts of Pictou and Cumberland Counties for the year ending 30th September, 1902.

NO. 1 SLOPE, SPRINGHILL.

In this mine there was a continuation of pillar work until the end of April, when the seam was abandoned at this point and continued to No. 2 through Aberdeen fault, where the seam is divided by some twenty feet of strata.

The upper or fall seam was extended 559 feet, or a total distance of 2,739 feet, and the lower or bench coal was extended 515 feet or a total distance of 2,145 feet.

In June last a tunnel was driven to connect those two seams to better facilitate the handling of all three seams by haulage at the mouth of Aberdeen tunnel. Here a large turnout has been made capable of holding fifty boxes.

The haulage has been installed at this slope and is ready at any time to convey the coals from the three seams to No. 2 slope. In fact several trips have been run to insure that all is in order.

It is now two years, on Sept. 20th, since the Aberdeen seam was struck. During the last year 900 feet of slope has been cleaned out and timbered, a permanent bottom laid, and upwards of 250 feet of sinking driven in coal 11 feet thick, and free from shale, stone or slate.

The east level has also been extended 1,922 feet, or a total distance of 3,630 feet from Aberdeen tunnel, making a total distance from No. 2 slope of 7,854 feet, with several chutes and balances to the rise.

The west side of Aberdeen is now being worked "bord and pillar," stripping the Aberdeen Fault for a considerable distance to the rise.

On the west side of No. 2 slope the extraction of pillars has been continued during the year. On this side 129 feet were driven in the cross section tunnel, making the total length of the tunnel 1,122 feet.

SURFACE NO. 2.

At this [illegible] pe a new electric light plant has been installed, and a new brick [illegible] ectric station built. The system consists of 2 sets of 100 [illegible] lternating generators, driven by a pair of 13x14 inch [illegible] rank engines, built by Goldie & McCulloch, of Galt, [illegible] lation for a pair of new hoisting engines, 30x48 inches, is rapidly ne[illegible] ing completion at this slope. The engines are furnished with 2 cas[illegible] n drums, 7 feet in diameter, with flanges deep enough to fold 6,[illegible] eet of 1¼ inch rope on each drum.

LAMP HOUSE.

A new vert[illegible] and shafting has been placed in this bui[illegible] ing the lamp cleaning machine.

[illegible] SHOP.

In this [illegible] he is used, and an improved Barnes' po[illegible] t been erected.

[illegible] 3 [illegible] RINGHILL.

The bord [illegible] een continued throughout the year in the 2[illegible] encing 9,420 feet from the main slope, leaving a [illegible] t to maintain the return air-course. During this time the 3,200 feet level was extended 2,321 feet, or a total distance of 9,180 feet, with places to the rise at intervals of 600 feet for ventilating purposes.

On the east side of this slope, both at the 2,600 feet level and at the 3,200 feet levels bord and pillar work has been carried on, though on a small scale, on account of the levels being shorter.

At the 3,800 feet levels a permanent bottom has been laid, and the west levels extended 364 feet, and the east levels extended 225 feet. The main slope was extended 319 feet, making a total distance of 4,119 feet.

At this point it was deemed advisable to stop the 3,800 feet levels, and also the sinking on account of all being well advanced. This work could be started again, with a few days notice, with a staff of 30 miners.

The air courses, returns and travelling ways in these slopes are in first class condition and everything in and around these collieries, especially the ventilation, is in good condition.

SURFACE NO. 3 SLOPE.

At this slope 12 Jones' underfeed mechanical stokers with automatic feed attachment have been installed and have given very good results. A new winding engine house has been erected. It is built of wood, with galvanized and corrugated iron outside, and makes a very neat appearance. A new capell fan is being erected with a capacity of 200,000 cubic feet per minute, on a concrete foundation. A concrete and brick engine house, with engine to drive fan, size 24x18 inches, has also been put up.

RAILWAY DEPARTMENT.

Three thousand tons of 80 lb. rails are being laid between Springhill and Parrsboro to replace the old 67 lb. rails.

Three new steel bridges have been put in, averaging 35 feet in length. Seventy-five new 15 ton hoppers have been built for the company by Messrs. Rhodes, Curry & Co., Amherst.

A new locomotive house is in course of erection.

A new consolidation locomotive has been purchased from the American Locomotive Co., Richmond, Virginia. The general description being, cylinders 21x28 inches, driving wheels 50 inches in diameter. Total weight when in working order 184,000 lbs. Weight of tender with fuel and water 103,000 lbs. Capacity of tender tank 6,000 gallons. Total weight of engine and tank when in working condition 147 tons.

JOGGINS MINES, NO. 2 SLOPE.

The principal work in this slope has been confined to the 2,500 feet lift, and the bulk of the coal has been taken from gateways on the east and west sides.

The west levels are in a distance of 1,700 feet from the slope, and are within 600 feet of the fault intervening between these workings and those of the old slope to the west.

The clay division is considerably thicker than usual and is considered to be due to the local roll. But the coal retains its usual good quality.

An attempt is being made in this section of the mine to recover some lost coal to the rise of the 2.300 feet level, and good progress, considering the broken nature of the ground, has been made.

The east levels, which had been driven 1,450 feet, as mentioned in my last year's report, have been continued and a junction made with the upper west level from No. 3 slope. This connection permitted the water made in No. 3 slope to be brought to the pump at No. 2, and did away with having to pump up to the 1,900 feet level, and also rendered the ventilation of the mine easier. No. 2 slope has been sunk a further depth of 600 feet and levels started east and west.

The sinking of this lift was accomplished in the face of many difficulties. When down about 550 feet a down throw fault of some 15 feet was penetrated, which necessitated a large amount of grading. Compared with other parts of the mine the clay division largely diminished, averaging throughout the lift about 10 inches.

A small engine, previously used to drive a picking belt, was placed at the back sinking, which is now going down rapidly.

NO. 3 SLOPE, JOGGINS MINES.

The east levels of the 2,500 feet landing were stopped several months ago, as the clay rather increased than diminished in thickness, and was expensive to work. Under more favorable circumstances the management contemplate resuming the exploratory works with the hope of reaching more satisfactory ground as the coal throughout this slope is of very good quality.

The bords on the west side driving towards No. 2 slope got into faulty ground, and it was not considered advisable to proceed any further, as the coal beyond the fault could be obtained easier from No. 2 slope side. Owing to this fact and and the very short working lift in No. 2 slope the output has dropped considerably, but the management anticipate the production of a larger quantity in the near future.

Some difficulty was met with in producing a proper ventilating current, but this was largely overcome by converting the open running fan into a closed chamber one. Bv strengthening and otherwise altering the structure of the fan its efficiency was largely increased. The speed was also greatly augmented and a fairly good current of air is now travelling the workings of the 2,500 lift. If the workings in the new sinking is to be pushed ahead there must be a different plan of ventilating the mine, as the quantitv of air in the mine is inadequate to work the lower lift. I would advise strongly a fan for No. 2 slope.

The two tipples, shaking screens, and picking belt have also been installed. These will be run by a Leonard & Tilley engine, 9x10 inches. A McDougall engine, 7x12 inches, will run the creepers which are not yet in place.

The machine shop, fitted with laths, drill and all necessary tools, is run from the fan engine, which is of McDougall's make, 8x15 inches. The ventilating fan is 14x8 feet.

They have two 14x5x13 inches Jeansville sinking pumps, which were used in pumping the slope. They have one Jeansville duplex pump 16x6x18 inches, which they intend to install at once. They have also a new Northey pump which they intend placing at the 1,400 feet level, when sinking is completed. This mine has all appearance of being an up-to-date mine in the near future, and everything in and around the mine is carried on with neatness and despatch and reflects great credit to the management, taking into consideration the hazardous work they had to contend with.

VALE COLLIERY, PICTOU CO.

On account of so much idle time last year the extention of the mine was limited.

The north levels have been driven in 800 feet, and three new balances are being worked. In the sinking two parallel levels are being driven on each side of the dip, and three new balances are being worked. Further developements on the east level have been stopped for the present.

Active work has again been commenced on the west side and the intention is to fully develop this part of the field. At present the mine is double shifted and shows an increase in the output, but not enough to fill the demand. The mine is comparatively free from gas and thoroughly ventilated.

On the surface there has been no improvement. A new magazine has been built to replace the one that was blown up by the explosion of powder on the 23rd of August last, by which two young boys lost their lives.

MARSH COLLIERY, PICTOU CO.

This mine worked continuously during the year. The slopes are down a distance of 1,575 feet, and are still being driven. The levels referred to in my last report, turned off at 875 feet, are in a distance of 734 feet with two balances on each level.

No. 1 balance, west side, is driven up 310 feet, with 8 bords on it.

No. 2 balance, west, is up 220 feet, with 5 bords on it.

No. 1 east side, is driven up 365 feet, with 9 bords on it.

No. 2, east, is up 170 feet, with 4 bords on it.

New working levels have been turned off on west side of slope at a distance of 1,375 feet, making a working lift of 500 feet, and they are in a distance of 300 feet. A new balance is also starting on this level. A new 6 or 7 inch duplex Cameron pump was put in at second level to handle water making on these levels, also water making in sinking.

On the surface railway sidings are being extended, and the bankhead raised 6 feet, to make room for new screens which are being put in. A new office and magazine were built to replace those that were destroyed by an explosion of dynamite last January. The ventilation in this mine is very good, and everything in and around the mine is kept in very good order by the Manager, Mr. James W. McIntosh.

ALBION MINES, PICTOU CO.

THIRD SEAM.

The levels in this seam have been driven east and west from new bottom. The levels going east are in 23 chains from the slope bottom. The levels going west are 70 chains and 2 links from slope bottom.

There has also been a stone drift put through from this seam to the cage pit seam, 140 feet in length, which allows a section of pillar work to be started in the cage pit seam, which has increased the output considerably.

Owing to the condition of the mine in regard to scarcity of places and the great demand for coal, the mine is working double shift at present, but as there is a great scarcity of labor in all classes. The output has not increased to meet the demand, although it has been increased from 400 tons to 600 tons.

McGREGOR PIT.

There has been no work done in this seam except driving a pipe head.

A new Jeansville pump is to be put in. Its dimensions are 18 by 27 and 44 by 9 by 36 inch triple expansion condensing outside, fitted with a special 6 inch Wyoming eliminator, also a steam trap and a 10x12x18 inch duplex condenser.

A special column pipe, 10 inches in diameter, has been imported for this pump, 5,000 feet in length, 2,000 feet tested to a pressure of 800 lbs per square inch, and 1,500 feet tested at 500 lbs., 1,500 feet tested at 325 lbs. A new 8 inch steam line has also been installed, and it was necessary to change all pipe lines at present in use, owing to the pressure having to be increased from 80 to 115 lbs., which made necessary the changing of about 12,000 feet of pipe line.

This pump, when in operation, will have a head of 674 lbs. per square inch, and it is supposed to be the largest direct pump used in mining at present.

The excavation for the pump house is 63 feet long, 21 feet wide, 18 feet high, which will admit an overhead hoisting apparatus being put in to handle parts of pump. When this pump is in operation it will handle all the water made in the three seams and will displace 4 pumps at present used, also a boiler plant at the Ford pit.

The pump room will be supported by stone walls, with 12 inch I. beams for a roof. A bed of concrete 3 inches thick will be the pump foundation.

MINUDIE MINE, CUMBERLAND CO.

This seam of coal is opened by two slopes, situated 700 feet apart. The slope which has been full of water during the past six years is termed No. 1 slope, the other No. 2 slope.

No. 2 slope has been advanced another lift of 300 feet, driven 10 feet wide by full height of coal. Bords have been broken off at intervals of 35 feet apart on both sides of slope, and driven in a distance of 50 feet, where they are opened through to each other and worked on the longwall system.

Those going west are cut off by a fault rnnning at an angle of 24° across the slope. Those going east have been cut off by a balance driven from the level, and re-formed on opposite sides of balance. The east level is now in a distance of 400 feet, and the west is driven 250 feet from the slope.

No improvements of any importance have been made upon the surface at this slope, except building a carpenter's shop, and tool house and the installing of another boiler of 35 horse power.

NO. 1 SLOPE.

This slope has been pumped out and retimbered, and the 500 feet levels have been retimbered, and working places started away on the longwall system.

This slope has been sunk another lift of 300 feet, but no work has been opened up except the driving of a pipe slope. The water of this mine is pumped to the surface by a Northy duplex pump, size 6x10x12 inches,

On the surface considerable work has been done. The old engine house has been repaired, and two new 60 horse power return tubular boilers have been set in brick and a double cylinder engine of 75 horse power installed to handle the product of the mine.

A new bankhead, 90 feet long and 30 feet wide, with two screens, has been built, also a small office, blacksmith shop and a cottage for the manager.

The railway siding, about 700 yards long, has been relaid, and connected to the Joggins main line.

STRATHCONA COLLIERY.

This mine has worked continuously for the last year.

During this time they have sunk their slope a distance of about 375 feet, making the total length of this slope about 460 feet. The levels are turned off east and west at this point, and a few places are working to the rise. The coal is very good and improving in quality as they go down.

On the surface there is a new bankhouse, screens, engine house, carpenter shop, blacksmith shop, office and store house.

The hoisting from the mine is done by a donkey engine, and a horizontal boiler, placed on a solid foundation. In addition to the above buildings they have built a large boarding house, single house for under ground manager, and a barn. This mine is in first class condition and the ventilation is good.

JUBILEE MINE.

This mine did a considerable amount of work the first part of the year, but changing ownership early in the spring, during the summer no work was done, except keeping the mine clear of water. The management expects to do quite a business this coming year.

The amount of ventilation is inadequate on account of the air-courses being neglected, while the mine was kept clear of water pending negotiations for a sale of the property.

SCOTIA MINE.

The owners of this mine, Messrs. Ripley and Blenkhorn, are sinking a new lift. They are now down about 50 feet with their new sinking and expect to turn two levels off at 100 feet.

They have installed a new plant on the surface, a donkey engine, and one horizontal boiler, with a small Cameron pump for pumping water out of the mine. This is quite an improvement on the one horse engine they had before for hoisting coal out of their mine.

In a few months it is expected the output will be greatly augmented. Altogether matters are looking more favorable than they were at this time last year.

CHIGNECTO MINE.

As stated in my last report, this property changed hands in July, 1901, and it has been worked since under the name of the Maritime Coal Co.

The company started pumping out the old slope last October, and on the 27th of February, when 475 feet from the old surface, fire broke out from the old workings. They were unable to locate it, and consequently were obliged to close up the slope to smother the fire. They then started to open up the seam about one mile west of the works on the same property, and sunk two shafts to a depth of 50 feet and found a superior quality of coal. The top coal measured 5 feet 2 inches and the bottom coal 5 feet 2 inches, separated by 6 feet fire clay. After the mine had been closed for two months, the management decided to open up the old slope, and found no trace or sign of fire. They started again to pump out the mine, closing off the old works with permanent stoppings outside of the upcast and downcast

They have now got the water out of the mine after considerable trouble, as there were some heavy falls which they have got cleaned up, and have got the slope timbered in good shape. Airways and travelling road on each side are cleaned out and timbered in good shape.

At the bottom of the slope, which is 600 feet deep, the top coal measures 3 feet 6 inches. The bottom coal measures 5 feet 6 inches, separated by 1 foot 3 inches of fire clay.

There is a third seam of good clean coal 2 feet 6 inches thick above what is termed the top coal, which has never been worked. It is separated from the top coal by 4 feet of fire clay.

They will commence sinking in a few days, as they have abandoned the new works for the present. The old slope is much the better location for railway access, and has a never failing supply of running water close to the bankhead sufficient for all purposes of the colliery. The company intends to sink continuously until they reach 1,400 feet from the surface.

They have repaired the manager's house, boarding houses and twenty-five tenement houses in first class shape. They have repaired the blacksmith shop, which is 20 feet by 60 feet, carpenter's shop, 20x38 feet, oil house, locomotive shed 181x60 feet, fan house 18x27 feet. The engine house, 40x49 feet, screens and picking table 40x43 feet, and bankhead 92x83 feet are connected and under one roof. This building has been repaired in first class shape and a new iron roof put on.

The boiler plant consists of two new steel tubular boilers, 60 inches by 14 feet, made by I. Matheson & Co., New Glasgow, and two steel shell boilers 3½ feet by 30 feet, which are kept in reserve.

They have installed a new Matheson double cylinder hoisting engine 16x30 inches, with two loose drums, 8 feet in diameter by 4½ feet, also a small double cylinder hoisting engine, 35 horse power, made by S. Flory Manufacturing Co., Pa., which is used for hoisting temporarily.

Two stone drifts are projected in the McGregor seam and will be started as soon as practicable. They will connect the Third Seam, Cage pit seam and the Foord pit seam, which has been lying dormant for a number of years, and the coal will all be taken out of the McGregor slope. This should place this mine in the line of modern mines in regard to output.

Two new Sterling boilers have been added to the plant during the year, each of 200 horse power, and with a new feature in the shape of smoke stacks. The smoke stacks on these two boilers are 101 feet high from the ground floor, or 86 feet from smoke box at the top of boilers, and 39 inches in diameter. A new heater has also been put in to feed boilers with warm water instead of cold water as at present.

No. 1 Slope, Drummond Colliery.

The chief operations carried on during this year were on No. 13 lift.

Six balances were opened up and the extraction of coal vigorously continued. South side Nos. 1 and 3 balances were worked.

On No. 14 lift south, levels were advanced 1,300 feet, and Nos. 1, 2 and 3 balances driven. The north levels were worked to the boundary line, and Nos. 3, 4 and 5 balances cut through to lift above.

In the latter part of April the sinking of Nos. 1 and 2 slopes began and is now about completed. Levels will be driven north and south. To the deep the coal has much improved both in quality and height.

At No. 6 lift a start has been made to clean out the old level and mine bord to connect with a place driven from this lift to No. 4 slope.

Airways and returns have been enlarged, and under the management of Mr. Blue the ventilation has greatly increased, so much so that there is nearly double the quantity there was last year. These slopes are in good condition. During the year a new bankhead has been erected at Nos. 1 and 2 slopes, capable of handling 18 boxes per trip. Loaded boxes are delivered at the weigh scales, and after being unloaded by tipples, return by gravity to the brow ready to go down the slope.

No. 4 Slope.

Below Findlay's incline a number of pillars were taken out and the roadway extended to No. 6 lift of main seam. Several large blocks of coal were removed both east and west of slants, to rise of Findlay's incline, and all coals from upper lifts worked out.

Several places are now driving east of slants to the rise.

A 200 H. P. Hiene water tube boiler, which supplies power for hoisting and pumping has been installed at this mine. The electric light plant, installed late in 1901, is giving good results, a large number of lights are now in use. A 1,200 C. P. arc lamp is placed at the entrance to the slope.

picking belts has been remodelled with an exten-
which is a great improvement compared with the

stationary. It is so arranged that the coal is delivered into the cars without any chutes, thus materially reducing breakage of coal.

At No. 2 slope two hoisting drums, with gear wheels complete, have been erected, replacing single driving and friction wheels.

ACADIA MINES, WESTVILLE, PICTOU CO.

During the past year coal has been steadily worked outward in No. 10 lift.

About 1,150 feet on the south side of main slope, No. 3 jig, has been driven up to No. 3 lift, and the coal is being withdrawn at the top. No. 2 jig, about 750 feet from the slope, is driven up 85 feet.

This leaves on the south side of No. 10 lift, No. 1 still to be driven, and No. 2 finished before pillars can be taken out.

The pillars are being taken out in No 3, 4, 6 and 7. No. 5 jig is worked down to within 70 feet of the No. 10 level, and is stopped for the present.

On the north side it is worked with shoots. No. 1 chute is driven 90 feet and has nearly 200 feet more to go. Pillars are being withdrawn rapidly in No. 2 and 3 shoots. Inside there are 400 feet of level pillars being worked and about three quarters have been taken out.

No. 11 lift has been sunk about 380 feet, and the south levels are driven in a little over 600 feet. The north levels are in about 180 feet. In sinking, a fault, about 25 feet thick, was struck 290 feet down from No. 10 lift.

The top levels were turned away 30 feet below the fault, and the north top level is in the same fault at present. The course of which is about north and south.

An airway has been started above the fault going north to strike the travelling slope when it is driven up.

A new bankhead is being erected to facilitate the banking of the coal, as present arrangements are found inadequate. The ventilation throughout the mine is fair, but owing to the great depth and the difficulty of maintaining airways of any size, a new fan of increased capacity is a necessity in the near future.

I beg to enclose tables showing amounts of air measured, accidents and causes. In conclusion I must say that the "Coal Mines Regulation Act" has been very fairly observed through the various mines in my district.

I remain your obedient servant,

Amount of Air Per Minute Circulating in Mines each Month.

Name.	County.	1901.			1902.								
		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.
Springhill No. 2	Cumberland	78000	79000	79200	78000	78500	77000	75000	74000	72000	72000	73000	74000
Springhill No. 3	"	70000	71000	75000	78000	79000	77000	76000	75000	73400	73500	74000	75000
Joggins No. 2	"	8000	8500	8200	9000	9200	9400	8000	8550	11130	12000	13000	14000
Joggins No. 3	"	7000	5000	7550	Idle.	Idle.	6000	6880	7000	6280	6000	6880	6750
River Hibbert	"	11000	12000	14000	14400	14000	15000	14000	13000	12000	12480	14220	14000
Jubilee Mine	"	1200	1300	13450	Idle.	800	900	Idle.	Idle.	Idle.	Idle.	Idle.	2000
Chignecto	"	Idle.	Idle.	Idle.	......	......	......	......	......	......	......	......	......
Scotia	"	2000	2240	2000	2500	2400	2300	Idle.	Idle.	Idle.	3000	3220	3250
Strathcona	"	10000	12000	11000	9000	12000	13000	11400	10550	9580	11540	13000	14000
Drummond Slope	Pictou	30000	40000	40400	41500	48000	48200	47000	47200	49000	50000	55000	60000
No. 4 Slope	"	21000	21200	20000	21000	20200	21000	20150	20000	20200	21000	21180	21000
Acadia Mine	"	27000	26000	28000	29000	28000	27000	25000	25120	24000	25000	26000	28000
Albion 3rd Seam	"	69000	70000	72000	71000	74000	75000	75480	77000	76800	77240	76000	77400
Vale Colliery	"	38000	37000	37400	36000	35000	35450	34000	34480	33000	36000	37150	37250
Marsh Mine	"	8750	8900	7480	9450	8880	8120	8000	8500	8450	8770	8780	8850

Monthly visits during the year ending 30th September, 1902.

MINE.	1901.			1902.									
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.
Springhill No. 2	22	24	23	25	24	27	22	23	21	21	22	24
" No. 3	23	25	21	28	22	29	25	24	23	22	27	25
Joggins Mines No. 2	16	17	19	15	19	20	17	14	17	16	19	17
" No. 3	16	17	19	15	18	20	17	14	17	16	19	17
Minudie Mines	15	18	19	16	17	20	16	13	18	15	19	17
Strathcona	15	18	18	16	17	21	16	13	18	15	18	16
Jubilee	15	19	18	14	17-20	14	16	13	18	15	18	16
Scotia Mine	17	19	14	14	17	14	15	12	17	15	19	10
Chignecto	17	18	14	14	19	14	15	12	17	15	19	10
Drummond Mine	7	12	11	8	4	4	4	5	3	8	5	2
Drummond No. 4	8	13	12	9	5	5	5	6	3	9	6	3
Acadia	8	12	11	9	5	7	8	8	6	9	6	3
Albion Mines	9	13	12	10	6 11	5	5	6	4	11	8	5
Vale Colliery	10	14	10	11	7	6	7	7	5	10	7	4
Marsh Mines	10	14	10	11	7	6	7	7	5	10	7	4
Cape d'Or C. Mine	.....	.....	.....	.....	.....	.....	.....	15	.....	.....	.....	.....
Wentworth	.....	.....	.....	.....	.....	.....	.....	.....	24	14	.....	.....

No.	Date		Mine.	Name.	Occupation.	[illegible]
1	Oct.	22.	No. 1 slope, Spr'hill	Roy Ryan	[illegible]	[illegible]
2	"	11.	Jubilee, Maccan	Wm. Long	[illegible]	[illegible]
3	"	11.	" "	Elvin Long	"	[illegible]
4	"	11.	" "	John Hurley	[illegible]	[illegible]
5	"	17.	Intercol: Colliery.	John McNeil	Boy	[illegible]
6	Nov.	8.	No. 2 slope, Spr'hill	Jonathan Patterson	Labourer	[illegible]
7	"	20.	Albion Mine.	John McLean	"	[illegible]
8	Dec.	5.	" "	Henry Flynn	"	[illegible]
9	"	6.	Marsh Mine.	Joseph Allan	Miner	[illegible]
10	"	30.	Joggins Mines,	Hugh McEachren	Miner	[illegible]
11	Jan	29.	Marsh Mine.	J. W. Sutherland	Manager	[illegible]
12	"	29.	W. Marsh Mine.	W. Sutherland	U. G. M.	[illegible]
13	"	29.	Marsh Mine.	John Wilks	M. Foreman	[illegible]
14	May	24.	Springhill.	Wm. LeBeuf	Labourer	[illegible]
15	"	17.	Intercol: Colliery.	Peter Graham	Boy	[illegible]
16	Aug.	18.	"	Joseph Turner	Miner	[illegible]
17	"	18.	"	Thos. O'Brien	Boy	[illegible]
18	"	25.	Acadia Mine.	Clarence Flemming	[illegible]	[illegible]

19	" 23.	Vale Colliery.	C. McNulty.	"	Killed by powder explosion.
20	" 23.	" "	F. McDonald.	"	" " "
21	July 11.	Intercol : Colliery.	Piers Murphy.	"	Leg broken at ankle attempting to jump on rake
22	Aug. 14.	"	A. McNeil.	Miner.	Slightly injured by a lump of coal falling from face.
23	May 2.	Joggins Mines.	Wm. Fornan.	Stableman.	Burnt slightly by gas.
24	April 21.	Albion Mines.	F. Vachreese.	Miner.	Seriously injured by a fall of coal.
25	" 17.	No. 2, Springhill.	John J. Wilson.	Driver.	Leg broken by a full rake.
26	" 14.	" "	E. Sweet.	Loader.	Fatally, falling down chute.
27	Feb. 8.	Albion Mines.	James Purvis.	Shiftman.	Killed by a fall of top coal.
28	June 3.	No. 2 slope, Spr'hill.	S Bunton.	Miner.	Leg broken by a fall of stone from roof.
29	May 27.	Joggins Mines.	John Murphy.	Boy.	Leg broken.
30	Sept. 15.	Acadia Mines.	T. Robinson.	Miner.	Leg broken by lump of coal.
31	June 12.	No. 3, Springhill	P. Burns.	R. cleaner.	Killed by passing rake.

CAPE BRETON COUNTY.

The sales from this county aggregated 2,924,967 tons against 2,260,955 tons in 1901. The production of the Dominion Coal Company was 2,952,758 tons, compared with 2,352,567 tons in 1901.

The sales in Nova Scotia again show a large increase, being 982,708 tons against 631,135 tons in 1901 and 469,258 tons in 1900.

The Dominion No. 2 colliery of the Dominion Coal Company, is now getting fairly under way.

The Nova Scotia Steel and Coal Company are vigorously continuing their new openings, and trade demands warrant, their output next year can be decidedl ased.

I append the report of P. Ne sq., Deputy Inspector for the Island of Cape Breton.

E. Gilpin, Junior, Esq.,
Deputy Commissioner a Inspector of Mines.

Dear Sir,—I beg leave respec to submit my report to you on the coal mines in Cape Breton e year ending September 30th, 1902.

Gowrie and Block House Colliery.

Work has been carried on at this mine during the year. The levels are being pushed rapidly forward by three eight hour shifts, and are now in 2,000 feet, where the coal continues to hold its superior quality. The levels have been narrowed down to 10 feet wide instead of 12 feet, while the rooms to the rise are now driven only 20 feet wide in place of 25, as formerly. A tunnel has been driven connecting with the air shaft mentioned in my last report. The ventilation has been greatly improved since this tunnel was put through. The air goes down through the new shaft and returns through the hoisting shaft, where it is assisted by the exhaust steam from the pumps. A double bottom and bankhead have been put in operation, which much facilitates the handling of the coal. Much improvement has been made in the surface arrangements, and surface drainage secured. A Hudson economizer has been installed, which entirely does away with lack of suitable water for boiler purposes. A survey connecting the surface with the underground workings has just been completed. Plans are now being made to install at once mechanical haulage in the levels. Picking belts and shaking screens are being put in.

The average amount of air per minute passing through this colliery is 14,000 cubic feet.

e number of visits made by me during the year was twelve.

CALEDONIA.

Caledonia has worked steadily during the year. No. 2 west deeps have been stopped at a distance of about 3,000 feet, in order that a larger area of coal be left for No. 3 colliery on the east side of that mine. However, the deeps are being driven in a more eastwardly direction, where the coal looks well and the roof good as they advance. Also on the east side of the pit the deeps have been steadily advanced, and new sections are being opened out, the coal and roof also improving.

Towards the rise both on the east and west side of the deeps where the rooms are finished, the pillars are being drawn very successfully. Owing to the extraction of pillars large quantities of water get through the broken roof, together with the water from Dominion No. 3, which is successfully handled by the self-dumping tanks in the water shaft. Ten of Jones' underfeed stokers have been erected in the boiler room and are giving good results in saving of fuel and labor.

The average amount of air circulating through this pit is about 85,000 cubic feet per minute. More can be had if required, as the fans are capable of giving more than three times that quantity. I have visited this colliery fifteen times during the year.

DOMINION NO. 2.

Work at this mine has been briskly carried on during the year.

PHALEN SEAM.

North and south levels have been driven 1,000 feet. At this point the main headways for the motor engines are driven. Deeps are also being driven from this point. Temporary headways have been driven 1,500 feet above the pit bottom and rooms driven off north and south. A lodgment was driven 800 feet below the pit bottom and a number of places driven off north and south, 200 feet each, for water space. Approaching the lodgment is a water tunnel driven 450 feet, which will terminate at 600 feet. An air tunnel is also driven a distance of 300 feet, and it is now within 10 feet of being through into the coal. Those two tunnels will be timbered skin tight with hard pine, as the roof is shaky and there is a great pressure. The pillar on the high side of the shaft is 400 feet thick and 1,000 feet long, with a few 10 feet places driven through. Above this were first left the room pillars 35 feet. Afterwards it was considered advisable to increase to 45 feet, and also as the rooms are broken off, going to the dip that a further increase of 5 feet be added to every 100 feet.

The average amount of air passing through this pit is 170,000 cubic feet per minute.

HARBOR SEAM.

North levels were driven 384 feet. At this point they were turned up towards the International pit and driven 924 feet and are now within 300 feet of being through. The intention is to have a barrier and bore through. A pair of north headways were driven 1,200 feet, and a pair of south headways driven 1,070 feet. A pair of south levels have been driven 1,568 feet, and a pair of south deeps 1,160 feet and a pair of north deeps 509 feet to date. Size of pillars in this pit or seam is 30 and 35 feet.

Amount of air passing through those workings is 75,000 cubic feet per minute.

SURFACE.

One steel tower has been erected over man and water shaft—height 85 feet. One steel bankhead, now in course of erection over main shaft, which included two screen houses, picking belts, &c., which will operate both seams of coal. Height of pulley centres 132 feet. One steel water hoist and fan engine house has been erected, size 49x47x26 feet post, to which is joined the second fan engine house, size 35x13x10 feet post. One Phalen and Harbor hoisting engine house 48x64x28 feet post. One steel boiler house in course of erection, size at present 82x99x24 feet post. One building of offices, wood frame with expanded metal covering, size 40x20x12 feet post.

This colliery I visited eighteen times during the year.

INTERNATIONAL MINE.

Two new bore holes, 12 inches in diameter, have been put down at pumping station from surface, a depth of 305 feet, one being used for steam and the other for water. No. 11 landing, consisting of 25 working places, which was drowned out for seven months, was again won in May last. A deep has been started off at the face of No. 11 level and driven a distance of 600 feet. This is to connect into a level driven from No. 2 colliery, and will be used as a waterway through which the water from International will pass through to No. 2 water shaft, to be raised from that colliery by tanks. The distance yet to be driven, at this date, to connect the two collieries is 300 feet. A new section of pillars is being drawn very successfully and the coal taken to the shaft by main and tail rope system of haulage.

Average amount of air ventilating this colliery is 70,000 cubic feet per minute. I visited this mine eleven times during the year.

DOMINION NO. 3.

The main slopes have been driven down during the year 1,000 and four levels on each side, east and west, driven off. Rooms been driven off those levels on the pillar and room system opening up eight sections. As the rooms are worked to the rise and boundary in each section the pillars are then drawn back successfully, very little coal being lost. The sinking and deep coal is hauled by a trip engine to the landing, where it is handled by the endless haulage. Care is taken that the barriers between this mine, Caledonia and the Reserve are not pierced at any points except by the waterpipe passing the water through to Caledonia.

On the surface there has been one new Babcock and Wilcox boiler, 137 horse power, installed. The surface is well equipped with a first class water system. Along with this there are five patent fire extinguishers placed in the most important stations. The mine is also equipped with a telephone system, taking the important stations from the face of the main slope to the Manager's house. The output at this mine has increased to about 1,900 tons daily.

The average amount of air passing through this mine is 42,000 cubic feet per minute.

I visited this mine 13 times during the year.

RESERVE.

This mine has worked in its usual steady way during the year. French slope has been driven 450 feet and levels turned off. The main haulage road in this slope has been extended 750 feet and the south level driven 1,000 feet, north level driven 700 feet and No. 4 south level driven 1,000 feet and connected in east slope. The east slope has been driven down 700 feet, where levels have been driven off and rooms opened. Two haulage engines have been placed in the east and French slopes. One thousand feet of 6 inch air pipe has been extended in French slope, and 450 feet of 8 inch in east slope. In the main or west slope the greater part of the mining done was in the extracting of pillars, which is going on very satisfactorily. Timbering in this pit is well attended to, and the travelling roads kept in fine order. The new fan, mentioned in last year's report, has been put in operation It is 24 feet in diameter and 6 feet face, capable of giving 275,000 cubic feet of air per minute for 100 revolutions. One cannon pump (steam), 12 inches, 2 feet stroke, 7 inch plunger has been placed in the pit.

Ventilation in this mine averages 250,000 cubic feet per minute.

This mine I visited thirteen times during the year.

DOMINION NO. 1.

Levels and rooms have been driven in the ordinary course of working. A new lift of 1,000 feet has been put through in south deep, gaining two new landings to make up for landings, which are finished at the top of this deep Pillars are being successfully drawn on No. 3 and No. 5 landings, south side, and also on No. 6 landing, north side. A new lodgment is finished at the bottom of south deep, capable of holding one million gallons of water, and a large pump is in place at that point to pump through the bore-hole into International water level, whence the water runs to the sea. This pumping station will partially drain Reserve colliery. Also a new fan and engine of the same dimensions as that at Dominion No. 2, and built by Dickson Co., Scranton, has been erected during the year, and a fire proof building put over it which building also extends over dynamo and engine.

A new endless haulage plant has been erected during the year on the surface, a new feature of which is two grooved pulleys, on the engine instead of the old bull wheel with lagging on it. Thus there is no wear on the rope, due to the slipping over on the bull wheel and the three ropes being on the same engine. The endless haulage is now concentrated in one place. This plant is also covered with a fire proof building.

A telephone system is being put in connecting all the sections of the mine with pit bottom, engine houses, colliery office and Manager's house.

Connections have been made so that the air pipes in any part of the mine can be filled with water by the fire pump to use in case of fire.

The following shows distances from shaft to faces of deeps and levels:—

South deep, dist. from shaft to face	6,000	feet.
No. 5 level, dist. from Deep to Reserve barrier	2,300	"
No. 6 level, dist. from Deep to Reserve barrier	1,600	"
No. 8 level, dist. from Deep to Reserve barrier	400	"
North deep, dist. from shaft to face	6,000	"
No. 6 level, dist. from North deep to Angle deep	3,000	"
No. 7 level, dist. from North deep to Angle deep	3,300	"
No. 8 level, dist. from North deep to face	3,700	"
No. 9 level, dist. from North deep to face	600	"
Angle deep, dist. from shaft to face	3,150	"
No. 5 level, dist. from deep to shore barrier	1,000	"
No. 6 level, dist. from deep to shore barrier	500	"

Average ventilation in this mine is 112,000 cubic feet per minute.

Number of visits made by me during the year was thirteen.

NOVA SCOTIA STEEL & COAL CO.

SYDNEY MINES.

During this year at Sydney Mines the N. S. Steel & Coal Co. urchased 100 16 ton cars. Owing to the bankhead of Princess being only high enough for the loading of six ton cars, it was found that instead of raising the bankhead to the required height to load coal into the new cars, it would be better to have a picking belt and elevator placed at right angles with the present screens, and the coal was raised to a point where it could either be loaded into the large cars or in winter time could be loaded into smaller cars or be banked on the bank floor. This has been done and is giving complete satisfaction. The picking belt and elevator are driven by a system of rope gearing from the engine which operates the wash plant. They have also installed a Jeansville pump at the bottom of the water shaft in Princess pit, to force the water up the shaft and to allow the Cornish pump to remain idle, except necessity should require in the future; this pump will be operated about once a week, so that should any accident occur to the shaft or force pump, this Cornish pump would always be in readiness.

The new pump is a Duplex, compound in the steam end, and the following are the sizes thereof:

Cylinders 15 and 28 inch by 8½ inch plunger by 24 inch stroke, outside packed and connected with one 8x12x12 inch single condenser, including one 4 inch Wyoming eliminator. This pump is guaranteed to pump 600 gallons (Imperial) per minute, under 720 feet head with 75 lbs of steam.

Owing to the amount of haulage in the Princess pit, and to the fact that the engine is now drawing from the south, from a point at which the present system is not profitable to the company, and as they have a mile or more to go before reaching their boundary, it has been decided to replace the present haulage by an endless haulage system which is to be put in during the coming winter.

The south deeps have been extended and new lifts gained. Pillars on both sides of the upper sections of south deep have been drawn steadily during the year. The long wall on the north side, that has been carried on for a number of years past has been discontinued, and the coal in that section is to be worked on the pillar and room system. A road has been laid from the bottom of the Princess pit up to the Queen pit in order to extract a large number of pillars that are there in excellent order with the roof in good condition. The coal is brought to the pit bottom from this district by tail rope system of haulage.

The company has also opened up three slopes on the Lloyd's Cove seam, which overlies the main seam. At a distance of about 350 yards northwest of the Princess pit, they are at present driven down 1,300 feet, and the coal is giving entire satisfaction, so much so, that they have erected a bankhead at right angles with the main line, and are erecting a haulage engine in the immediate vicinity of the boilers at Princess pit, and propose drawing coal from what is known as Sydney No. 2, in the Lloyd's Cove seam, from the interior of the mine to this bankhead to have the coal prepared previous to putting into cars, thus obviating the building of a branch line from the main line to No. 2. This also will be operated by endless haulage, and the same pair of engines that are being placed to operate this endless haulage in No. 2 will also operate the endless haulage in the Princess pit, thereby obviating the carrying of steam down the shaft as heretofore.

They are also preparing to erect a large Walker compressor, for the purpose of running mining machines in the No. 2 colliery. This, with a fan and engine, will be placed close to the high pressure boilers at Princess pit. With this object in view an air shaft is being sunk into the Lloyd's Cove works to enable them to ventilate No. 2 mine. All of these are at present under construction.

The company has also opened a new colliery known as Sydney No. 3 on what is called the Cox farm, on the north side of Big Pond. This colliery is opened on what is known as the main seam, by three slopes driven down on the pitch of the seam from the crop. By these slopes they propose operating a large tract of coal under the land in addition to that which they can win from their water area.

The average amount of air circulating through the Princess pit is 100,000 cubic feet per minute, and through the Lloyd's Cove seam 6,000 feet per minute.

I visited these operations thirteen times during the year.

Sydney Coal Company

A few men have been employed during the year at this colliery mining and getting out coal. The levels have been extended and rooms driven off towards the rise as usual. The shaft, that has been sunk at the top of the travelling road for the workmen to go to and from their work, has been sunk on Mrs. Barrington's land, and it appears she is not willing that it shall be in use for that purpose unless the company pays for the land. On the other hand the company claims that she is charging too much. So it is yet unsettled. This is very unfortunate for the workmen, as there is no other travelling road for them to go by, except the haulage road, and that is dangerous to travel by when in motion. The timbering in this pit throughout is well attended to.

The average amount of air passing through this colliery is about 6,000 cubic feet per minute.

I visited this colliery 12 times during the year.

Broad Cove

The slopes during the year have been driven a distance of 300 feet. There is 50 feet more to be driven, when levels will be turned off, gaining another lift. A pair of levels on the east side have been driven 962 feet, which brings them within a short distance of high water mark. It was found advisable to discontinue driving those levels as at the face they were getting wet. Concrete dams have been put in close to the face which holds the leakage back. Two new balances have also been driven on this level.

A new Cameron pump 9x18x20 inches has been placed below No. 2 level, which takes the place of four small pumps, and does the work with better satisfaction. A line of larger pipes was also put in to suit this pump. A new 18 feet fan has been ordered to take the place of the small fan now in use, as more air will be required as the mine is opened out.

On the surface another new boiler has been erected, which makes a battery of two Babcock and Wilcox. Forty new double dwelling houses are nearly completed.

The new pier at Port Hastings is about completed. It is to have a pocket capacity of from 3,000 to 4,000 tons, and is equipped with all the latest improvements for shipping coal.

The average amount of air circulating through this mine is 18,500 cubic feet per minute.

The number of visits made during the year was ten.

MABOU COAL MINE.

Developements have been pushed ahead vigorously during the year. Trial pits have been sunk and the positions of the seams fairly located. The slope on the 7 feet seam has been driven down a distance of 380 feet, where the coal has greatly improved in appearance. The angle of the dip, that this slope is driven on, is 40 degrees. It is well timbered. If the slope holds this angle it is likely that the covering at tide level will be 200 feet. The true dip of this seam is 65 degrees. A new slope has been started on what is called the 15 feet or big seam. This slope has been driven a distance of 400 feet. It is also well timbered, being 6 feet 4 inches in height and 9 feet wide. The angle that this slope is driven on is 35 degrees, while the true dip is about 80 degrees. This seam is underlying the 7 feet seam and nearer the upheavel, therefore having a higher pitch. The quality of the coal at the bottom of this seam also looks much better than any taken from the seam higher up. Ventilation is helped in those slopes by openings from the old works. Improvements have also been made on the surface plant. Two horizontal return tubular boilers of 70 horse power, also a vertical boiler of 25 horse power, and a small hoist of about 40 horse power, and two small pumps for sinking have been put in place.

There are now three double tenement houses at the mine and one single and a large boarding house 108x26 feet, two stories high. There is a boiler house, office and workshop, wash house and store house, all completed.

A railway from the mine to a shipping wharf, a distance of 4½ miles, is all graded and ready for rails. The shipping wharf is well under construction, and a large office built near by. 77½x55½ feet, finished with best material.

The ventilation is about 3,000 cubic feet per minute.

This colliery I visited six times during the year.

PORT HOOD MINE.

The slopes have been sunk about 500 feet since last report, and at 400 feet a pair of levels have been driven off on both sides about 350 feet, and two balances driven on each side of the slopes. This gives a new lift. On the upper, or 1,000 feet lift, the levels are being steadily advanced and the balances driven up and rooms driven off. The coal looks much better in the bottom lift.

The company is building 25 cottages for miners; they are about completed. The wharf extension is also completed, and the company is now in a position to load large tonnage.

The average amount of air going through this mine is 34,000 cubic feet per minute.

I made 9 visits to this mine during the year.

NEW CAMPBELLTON.

There is no new feature to be noticed since my last report. Deeps have been extended and levels and rooms driven off. The ventilation and timbering is good, making the mine safe. No accidents of any kind have occurred here.

The average amount of air per minute circulating through this mine is 32,000 cubic feet.

I visited this colliery 9 times during the year.

In conclusion, I may here say that the mines all through Cape Breton are kept in good order, ventilation good, and travelling roads in good condition. In general the requirements of the Coal Mines Regulation Act are willingly carried out.

However, when it is considered that the greater part of the Cape Breton coal is undermined by machinery, blasted down by powder and then, I may say, filled into boxes by unskilled labor, and that these laborers, as soon as they get to know how to load coal and something about the pit, are taken away and fresh men put in their place, it can be seen that there is great liability to accident.

You will notice by the table showing the accidents, that one occurred on the surface at Sydney Mines. The name was McIntire. He was stepping over a belt connected with the elevator and was caught by a revolving shaft and wheel. Another death occured at Dominion No. 1. McPherson was on the top of the cage with another man examining the shaft, when he took a fainting fit and fell, striking his head against the side of the wall stone of the shaft while the cage was in motion. It was not known until after his death that he was subjected to fits.

There has been some prospecting done in Inverness County for coal during part of the year, but I did not hear of any workable seam having been discovered. Prospecting has been going on in Richmond County with the same results. Prospecting has been carried on for some time and is still being continued on the Mira Road, but I have not heard of a workable seam having been struck. It was reported the Reverend Mr. Murray opened a four and a half feet seam at Black Brook. I went there, as you directed, to see it. It happened at the time that the little pit was full of water, so I did not see the seam, but the coal that was taken out of it looked well.

Messrs. McVey, Burchell and Hickey did some prospecting at the head of Lingan Bay, and struck a seam of coal there. It is traced by bore holes and trial pits for about a mile west of Lingan Bay. Two trial pits were sunk on the seam, one to a depth of 45 feet, and the other to a depth of 30 feet. The coal was found in both these pits to be 4 feet 5 inches thick of fine looking coal, with a parting in the middle of 2 inches of black slate and a fire clay bottom.

I have the honor to be your obedient servant,

P. NEVILLE,
Deputy Inspector of Mines.

Accidents in Cape Breton Coal Mines year ending September 30th, 1902.

TE.	MINE.	NAME.	AGE.	OCCUPATION.	REMARKS.
Dec. 13, 1901.	Dominion No. 1..	Mick. McDougall...	30	Loader	Slightly burned by gas.
" "	" " ..	Jos. Dunn............	49	"	" " "
Dec. 18, 1901.	" " ..	D. J. McPherson...	45	Carpenter	Killed while examining shaft on top of cage when cage was in motion.
Jan. 4, 1902.	Dominion No. 3..	Joseph Gillis.........	23	Machine helper.	Leg fractured by fall loose coal.
Feb. 1, "	Caledonia	D. M. Morrison.....	18	Driver	Slightly singed by gas.
Feb. 8, "	Dominion No. 3..	Giovana Morando...	23	Loader	Scalp injured, one rib fractured by fall of stone.
Feb. 10, "	Caledonia	Dan. McDonald.....	50	Shot firer	Slightly burned by gas from top of a fall.
" "	"	John Fortune........	25	Miner	Seriously burned by gas; died ten days after.
" "	"	Dan. Quinn	22	Loader	Slightly burned by gas.
" "	"	Alex. Campbell.....	23	"	" " "
April 4, "	International	Charles Strang......	26	On-putter	Wrist broken; caught between two coal boxes.
April 26, "	N. S. S. & C. Co..	Nicholas McGimy...	33	Miner	Seriously hurt; two ribs broken by fall of stone from roof

May 10,	"	N. S. S. & C. Co.	Phillip McIntyre	26	Oiler	Seriously injured on surface; caught by cog-wheels.
May 19,	"	Port Hood	A. R. McLellan	32	Pit manager	Slightly burned by gas, which was in cross-cut.
June 2,	"	Dominion No. 2.	Elia Porter	32	Loader	Killed by fall of stone from roof.
June 6,	"	N. S. S. & C. Co.	Harry McGowan	50	Miner	Killed by fall of stone from roof
June 13,	"	" "	David Williams	28	Driver	Leg broken by piece of stone from roof.
June 14,	"	Caledonia	Phillip McDonald	21	Loader	Leg broken by piece of coal falling.
June 28,	"	Dominion No. 2.	Robert Parr	40	Shaft man	Killed; fell back in shaft from surface.
July 4,	"	Reserve	Don. O. Hanley	20	Laborer	Killed by runaway full box in slope.
July 9,	"	Caledonia	Jacob Frost	23	Loader	Killed by fall of coal rolling on him.
July 26,	"	N. S. S. & C. Co.	George Dorsey	18	Trip runner	Collar bone broken by coal box capsizing.
July 28,	"	Port Hood	Hugh Beaton	21	On-putter	Leg broken; caught between coal boxes.
July 30,	"	Caledonia	John Y. McDonald.	20	Miner	Killed by fall of coal from face.
Sept. 9,	"	Hbr. Seam No. 2.	Bart Finlay	20	Laborer	Killed by fall of stone from roof.
Sept. 20,	"	Broad Cove	Angus Kennedy	18	"	Killed; run over by back balance rope-brake.
Sept. 24,	"	Reserve	James Power	23	Loader	Killed by fall of coal; hung shot.
Sept. 24,	"	Dominion No. 1.	Sam. Deveau	25	On-putter	Injured across hips; caught between coal box and pillar.

COAL MISCELLANEOUS.

Progress has been made in t[illegible]velopment of the coal resources of Inverness County. At Bro[illegible]ve development has reached a state permitting of regular sh[illegible] over the Inverness Railway & Coal Company's road to a very [illegible]cket pier at Port Hastings.

At Mabou, the Mabou Coal Co[illegible]ve continued their slope sinkings, and so far as they have been exten[illegible] the value of the property has been largely increased. This comp[illegible] is completing a road about six miles long, from the mine to a s[illegible]ipping place in Mabou Harbor, and will, it is expected, continue the road to a junction with the Intercolonial Railway at Orangedale.

At Port Hood, the colliery of the Port Hood Coal Company is working regularly and has made considerable shipments.

In Cape Breton County, on one of the Murray leases, the discovery is reported near the Cochran Lake seam of a new seam, 4 feet 6 inches thick. This should underlie many square miles of territory.

The development of the submarine areas of the Gowrie and Block House Co. has been steadily continued. Boring and searching for coal has been carried on at a number of points, but it is understood that nothing new can be reported.

The Government drills were kept continually in use. A memo. from Mr. D. W. Weatherbe, of the work accomplished by these drills, will be found as an appendix to this report.

GOLD.

The returns for the year 1902 show that 28,279 ounces were obtained as compared with 30,537 ounces produced during the preceding year. I give a report of visits made to the mines during the year. I may add that copies are being made of the plans of the principal mines for filing in the Mines office.

REPORT ON THE NOVA SCOTIA GOLD MINES.

FOR YEAR ENDING SEPTEMBER 30, 1902.

HALIFAX, NOV. 21, 1902.

TO DR. E. GILPIN,

Deputy Commissioner and Chief Inspector of Mines :—

SIR,—In handing in the annexed report on the gold mines of the Province for the fiscal year ending September 30th, 1902, I would respectfully suggest that the optional clause in the Mines Regulation Act referring to plans of these mines being kept, be enforced in cases where the Department deems it necessary. At least one case during the past season was brought to my notice where water from old and unknown workings broke into a new mine and drove the workmen out; and though in this case, fortunately, no fatality occurred, several lives might have been lost under slightly changed conditions.

Setting apart the actual danger incurred, hundreds, probably thousands, of dollars might be saved annually in plants and in the pumping of old mines in order to ascertain the underground conditions.

A few simple but explicit rules covering the use of explosives might also be advantageously put in force.

Though possibly fewer mines are being worked in the Province than last season preparations are being made in several districts for developments on a larger scale, both on the surface and underground.

Notably among those localities might be mentioned :—

Dolliver's Mountain, Ecum Secum, Wine Harbor, Sherbrooke, Caribou and Leipsigate.

I am,

Yours obediently,

D'ARCY WEATHERBE,

Mines Department.

Halifax, N. S., November 17th, 1902.

GOLD RIVER.

Old Lincoln property, Aug. 15, 1902.—P. H. Moore has a few men at work on the "Captain" lead, fitting up the plant preparatory to pumping out the "Captain" shaft which is about 240 feet deep.

The property contains a 10 stamp mill with ore bins and automatic feed. There is in the building a boiler, mill engine and steam hoist. It is understood that this property, which stands in the name of Alice H. Robinson, is held under option by the above.

North Star Mine.—A. Heisler is working on the property of T. N. Baker, and expects shortly to sink a new shaft.

BLOCKHOUSE.

Aug. 15, 1902.—Work was stopped here in March, 1902.

MOUNT UNIACKE.

West Lake property, Aug. 15, 1902.—Work at this mine has steadily progressed under the direction of J. A. Crease, one of the owners. D. Patriquin is foreman, and 8 men are employed.

Connection has been made from what was termed the "main shaft" last year with an old shaft 85 feet to the east, which has been sunk to a depth of 120 feet. The old main shaft is 110 feet in depth, and is some 60 feet east of the "west shaft," which is 85 feet deep.

All the ground on the main lead has been stoped between the three shafts, and to a distance of 250 feet west of the west shaft.

At this west face on the 75 feet level, the quartz measures about 7 inches. A pinch occurs, commencing at the surface, near the west shaft, and following a line pitching to the west at a low angle roughly parallel to the grooves on the wall, mentioned in my last report. (See report for 1901.)

At a point 25 feet west of the east shaft and at a depth of 65 or 70 feet, a roll or shoot of ore was encountered about 5 feet in thickness, and 10 feet high, and pitching easterly. The ore in this "shoot" apparently fills a fissure lying close to the main lead, though dipping in the opposite direction.

This "roll" of quartz is fed by numerous arms or stringers entering from the west, and its pitch, as in the case of the "pinch" mentioned above, follows the well defined wall markings which at the east shaft are falling towards the east.

The ore proved to be extremely rich, and some of the handsomest specimens ever seen in the Province were taken from it, and shown at the recent Exhibition in Halifax.

At a [illegible] of 100 feet in the east shaft a drift has followed the ore body, pr[illegible]ing it for about 40 feet.

The inten[illegible]ion now is to sink the east shaft and drive easterly on the main lea[illegible] This drift will intersect the "roll" on its pitch and both the main lead and it can be taken out in one back-stoping operation.

It is not [illegible] parallel formations exist below, though no [illegible] 'et been done to prove their existence.

At a distance of 55 feet so[illegible] e "Borden" lead on which this mine is situated, a 20 foot sha[illegible] n sunk between the "Nuggety" and "Westlake" veins on a [illegible] belt of quartz dipping to the north.

The old Madill (8 stamp mill [illegible] ll used for crushing.

A new boiler and hoist h[illegible] stalled at the east shaft and a small "Blake" and a "North[illegible] ip have also been added to the equipment.

The old hoist is in use at the middle and west shaft.

J. A. Johnson et al.—Several hundred feet east of the "West Lake" Company's mine A. Dunbrack has 3 men engaged in sinking a shaft on what is supposed to be the "Nuggety" lead.

The shaft is 100 feet deep and at the bottom the belt contains about 10 inches of quartz.

A whim is used in hoisting. Work was commenced on July 1st.

Royal Mining Co.—Across the road to the north of Johnson's shaft this company are sinking on a slate belt containing from 15 to 18 inches of quartz in small veins and stringers, and thought to be the "Chittick" belt, which has been opened further to the east.

Great Belt Mining Co.—T. Prince, manager, H. Prince, foreman, and 12 men.

The quarry working has now reached a depth of 120 feet and is 80 feet long. At the east end the old workings, which extend to an additional depth of 80 feet, have been tapped. One steam drill is being used in sinking, and the cableway is used for hoisting.

The 30 stamp mill is now completed and about 3,300 tons have been crushed during the year.

WAVERLEY.

The Waverley Gold Mining Co.—E. H. Emerson, Manager, and J. Hopkins, Foreman. About 70 men are employed. The underground workings have been greatly extended since last year, and the levels on the north side of the main shaft have been driven up to a line of pinch which intersects No. 2 level some 440 feet from the main shaft and intersects the shaft between levels No. 4 and 5.

The north leg of the belt is apparently barren of ore beyond this line of the pinch, and in fact the slate belt itself disappears.

On the south side of the main shaft the levels have reached the following distances from it:—

No. 1	560 feet.
No. 2	543 "
No. 3	367 "
No. 4	388 "
No. 5	about 400 "

Levels Nos. 3 and 4 have reached the line of the "Temple" areas and practically all the ore in these main workings is extracted above No. 4 level, while between Nos. 4 and 5 a considerable block was still in place at the end of September.

The main shaft is 465 feet deep, measured on the incline, and is about 360 feet in vertical depth.

The shaft known as "No. 2 South" has reached a point 350 feet on the incline, but the vein, which at the 130 foot level crossed into the foot wall, becomes smaller and is contained in a narrow belt, the walls of which are extremely hard.

The 130 foot level has been driven each way until the old open cut workings have been reached. Its total length is about 300 feet.

Considerable work has also been done in No. 2 North.

This latter shaft, which was sunk on the north leg, intersected No. 1 level in the main workings at a point 300 feet from the main shaft and sinking was continued to No. 2 level.

At 130 feet from the collar an intermediate level was run. This extends north-easterly from the shaft 235 feet and south-westerly 46 feet.

The large fissure vein which cuts through the hill in a north and south direction appears to follow the "Barrel quartz" on a line of intersection roughly coinciding with part of this level.

A new air drill, the "McKeirnan" by name, was being tested in the mine at the time of my visit. It has an advantage over most other drills in having fewer parts and being lighter in construction, though apparently equally as strong for the same capacity. Rand drills are in use elsewhere in the mine.

The mine was shut down during September and October and the mill from August 1st to October 12th, owing to a lack of available water power.

An average of about 20 stamps have been kept running during the remainder of the year.

To lighten the load on the water power the smaller hoist was removed from the main shaft and the larger one operating the deep skip is being run by steam.

The shaft house at No. 2 south was burned in July, but has since been rebuilt.

In February an accident occurred at the mine ; the powder magazine was blown up and a man named Munro killed

Since then a new system is being employed for thawing the dynamite.

A magazine has been built on the site of the old one, measuring 8 feet by 10 feet, and with double walls (4 inches between boards) the space being filled with sawdust. This building is 7 feet high and has a pitched roof above. It contains a bin 6 feet by 7 feet and 4 feet high, filled to within 18 inches of the top with manure. The cartridges are laid on this and covered with bags. This method is said to sufficiently thaw the "powder" in a remarkably short time while the manure has only to be renewed occasionally. An incandescent lamp arranged outside the building gives light at night through a specially designed window, and any chance of danger from defective wiring, etc., is removed.

This bin holds at present 7 cases, and its capacity can easily be increased. In a smaller building some distance away another method is employed for completely thawing that wanted for immediate use.

In a blanket lined bin holding 130 lbs. of dynamite, gauze wire trays are set one above the other and underneath a galvanized metal pan catches the drip. These trays and the pan are removable and are
tantly washed. The heat is applied by placing close to the bin
he floor two cans of hot water. The temperature of these is
sed to be kept below 125° F. and a theremometer is supplied
r.

W. Temple's property.—On the areas adjoining those of the above company W. Temple has a vertical shaft down 150 feet, from which point the vein is driven on for 68 feet northerly and south about 100 feet. The northern portion of the level connects with one of the stopes of the Waverley Gold Mining Company's workings. The vein appears to average here about 8 inches in thickness. The above shaft is situated on the anticlinal of this part of the district.

RENFREW.

The "Thompson" mine has been working during the year, 974 tons yielding, according to the returns, 1,374 ounces.

A small crushing was also made by the Warwick Co. in August.

FOREST HILL.

Strathcona Mining Company, Aug. 26, 1902.—W. Borden is now manager here, and J. C. Mason is foreman. Thirty men are employed.

The "Compressor" shaft has reached a depth of 260 feet. At 206 feet levels have been driven east 180 feet, and west 145 feet. At the face of the east level a bluff is left 15 feet in height, and a drift is in on the belt another 100 feet. From the face of this drift the ore has been stoped up to the shaft at a depth of 130 feet from deck. The old workings on the east side comprise all the ground above this level and to a distance of about 300 feet east of shaft. At the face of the west bottom level a straight bluff rises to a height of 20 feet, and from here the older workings extend another 80 feet.

At the shaft bottom the ore measures 6¼ inches, but above this in the shaft, is a barren space extending for 40 feet below the 206 feet level. This is probably a "pinch" between the regular shoots of ore, which pitch gently to the east. Sinking is now in progress.

Work on the shaft to the east, mentioned in last year's report, has been abandoned, as have also the operations on the "Ophir" lead to the north. A shaft house was built over this latter place. A 6 drill compressor is in use in the compressor shaft, and supplies two Rand drills. The mill which is situated upwards of 1,000 feet to the eastward has been running on night shift.

Modstock Mining Co.—Work commenced in this mine (which had been shut down since January, 1901), about the middle of March last.

B. E Paterson is manager, and 27 men are employed. John Gillis is underground foreman.

This mine is situated immediately to the westward of the above

[illegible]

[illegible] Engineer [illegible] exists [illegible] the [illegible] this mine [illegible] property [illegible] organized.

[illegible] operations [illegible]

[illegible] commenced

[illegible] were [illegible] property [illegible] in April [illegible] feet in thickness [illegible] stopped.

[illegible] very irregular and [illegible] granite.

[illegible] hundred feet across [illegible] granite are exposed and [illegible] quartz [illegible]

[illegible] this property [illegible] in the name [illegible]

[illegible] 90 feet, and [illegible] to the surface [illegible] foot in thickness [illegible] strike similarly [illegible] is north [illegible]

[illegible]

ISAAC'S HARBOR.

GOLDBORO.

J. R. Stuyvesant, Cyanide Plant.—These works which were moved last autumn from Caribou have been enlarged to more than double their former capacity, and several new features have been added.

The plant is contained in one enormous building 407 feet long, and varying in width from 30 feet to 70 feet.

This building is connected by a trestle 50 feet high and 100 feet long with the Richardson Gold Mining Co.'s mill, whose batteries are at present supplying "stock" for the process.

These tailings are raised 50 feet by a Centrifugal pump (4½ inch suction and 4½ inch discharge), and carried by a sluice over the trestle to the slime separators.

There are 5 of these settling tanks each 25 feet square, 8 feet high and holding 200 tons of sands.

It was found that the slimes collected in the corners of these tanks and they were boarded across, which somewhat reduced their capacity.

The pulp enters the tanks from the sluice box through a distributor, which is constructed as follows:—

A series of iron pipes are arranged horizontally from a central dish or basin covered with a mesh to catch foreign matter. The pipes are long and short alternately, and bent at the ends to ensure a circular motion. The liquid mixture enters the central dish through a vertical feed pipe from the sluice box, and by the horizontal pipes is fed evenly through the tanks, over which the "distributor" runs on a trolley.

On each side of the tank is a vertical wooden gateway made like a sluice box, and perforated with holes at regular intervals from top to bottom.

As the water carrying the slimes reaches these holes a roll of canvas is pulled up, and covers the rows below, allowing the slimes to flow off with the water as it rises. The slimes are carried off from here by a sluiceway underneath, and the sands are * shovelled out through two hatches in the bottom into 1 ton ore cars which carry the stock to the leaching vats.

The tanks are constructed with a false bottom made up as follows:

---

*Two men in the tank, and four trolley men empty 1 tank in from 1½ to 2 ten hour lifts.

Slate placed on tank bottoms at intervals of a few inches.

A layer of osnaburg.

A layer of 8 oz duck on top.

There are now 10 leaching vats of the same circular pattern and dimensions as formerly used and described, i. e.:

Twenty-five feet diameter, 5 feet in height, and holding about 100 tons. The trolleys containing sands from settling tanks are run on to turntables on top of these vats, and the contents distributed evenly with little manual assistance.

The strong solution of Potassium Cyanide (.25%) is fed from the solution tanks on to the vats, until its surface stands 4 inches above the sands, and it is kept at this height during leaching. The filter bottoms are then opened, and percolation takes place. The liquid flowing off is at first weak, but gradually becomes stronger, and when it is up to strength (.19% to .20%) the bottom is closed, and the weak solution (.10%) is fed on to the sands. On this being drawn off pure water is allowed to percolate through the vats thoroughly washing the "stock." From 36 to 40 hours is employed in complete lixiviation. and one man with a hose and nozzle empties 1 vat in 3 hours, iron doors in the sides being utilized for this purpose. The filter bottoms in the leaching vats are composed of strips of 2x4 scantling placed on edge across the bottom. This is covered with a deal floor perforated with round holes 2 inches in diameter. Above this is laid cocoa matting, and on top 8 oz. duck. wedged down around the edge with rope. The same arrangement of perforated pipes with blast of compressed air can be used as in former plant. All liquid passing through vats is now passed through zinc boxes to save any chance of loss, and an automatic weigher, gauge and sampler is used to check and test results. After passing through the zinc boxes the weak liquid is carried up to the solution tanks and after being brought "up to strength" is used again.

Refining the bullion.—About once a month the "gold mud" from the bottom of the precipitation boxes is collected and subjected to treatment with acid, roasted and smelted, and every 3 or 4 months a general *clean up* will take place.

The capacity of the above plant is about 150 tons per day, although not at present running at its full extent. In fact it has practically been only started.

The plant is, I understand, owned by J. R. Stuyvesant.

H. S. Badger is manager, and has employed J. W. Lindsay as assistant, and 12 men.

The power plant includes an 80 H. P. boiler, supplying the sluicing mp, solution pump and small compressor. Commodious office tory and store accommodation is contained in the building.

It is hoped that the process will prove a success, though experiment alone can decide this.

The Richardson Gold Mining Co., Aug. 27th and 28th, 1902.—During the past year 29,000 tons of ore have been extracted and crushed at this mine, and the underground workings have been extended as follows:—

The main east incline has now reached a distance of 760 feet. At 707 feet a level is driven on the belt 90 feet each way, and underhand stoping has been carried up from the faces to a level driven at a depth of about 670 feet. This level is in 220 feet on the south leg, and 323 feet north-westerly.

Above the end of this level on the south side a pillar has been left 30 feet long by 30 feet high, and at the shaft under the level there is a small rock support.

On the north side two pillars 30x30 feet support the walls and between these at close intervals heavy stulls are *hitched*. At the face of this level a block of ground remains in position, measuring about 40 to 50 feet in height, and about 140 feet on the level.

West of this block and on the same level the ore is all out to the north shaft, a distance of 110 feet, and on the west side of the shaft the level is continued for 120 feet.

This north shaft only measures from the deck 285 feet to the level just mentioned; but the difference in this measurement and the distance from deck to the corresponding level in the *main shaft is accounted for by the difference in dip which in the last 150 feet of the main shaft averages only about 19°, whereas the north shaft towards the bottom dips at 74° 30.

The ore is extracted above the bottom level for a distance of 85 feet west of the shaft, and the ground above the 250 feet level is worked out for some 200 feet or more in the same direction—westerly. At the 200 feet level, south of the main slope, in the old workings, a 4 inch discharge pump handles the water which is pumped to this poincf rom the bottom by a No. 7 Cameron sinking pump 4 inch suctiton and 3 inch discharge.

The enlargements in the mill plant have been completed during the year, and it now contains 60 stamps and a new 100 H. P. Mumford boiler (Robb), and the old 100 H. P. boiler. The old 60 H. P. boiler is also in the building, and is kept as a reserve.

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*The figures indicating the dip of this shaft in last year's report, through an error in printing, became transposed, giving an erroneous idea that the shaft was steeper at the bottom than the top.

The Wilfley concentrators have been done away with, the * ailings now being sent to the Cyanide plant.

At the shaft house a new Jencke's hoist and a 100 H. P. boiler have been inst l.

During e year the wharf and railway from it to the mine have been fi hed. This latter is over a mile and a half in length.

A vertic shaft has been sunk to the eastward, and has tapped an overlying v on the south dip at a depth of between 150 and 200 feet, from which point a cross-cut was driven to the north dip.

At the time of ngs were full of water and the above information given me by the manager, Mr. Cox.

At the time of the last in is shaft was 160 feet deep and measured 12 feet by 6 feet i rs.

The setts are 10x10 inch s i ner, and placed 4 feet apart for 60 feet, and then at intervals et apart, and are cased with plank driven behind.

John Thornham is unde eman, and about 95 men are employed by the company.

Dolliver Mountain Mining Co.—G. J. Partington is manager of this property and Dan McAskill is employed as foreman. As anticipated in last year's report, operations have progressed rapidly particularly on the surface. During the year the drainage area has been located and surveyed, and is said to cover 50 square miles. Two dams have been built and a sluice and 44 inch flume constructed to the power house a distance of 4000 ft. from the lower dam. From the power house, which contains a 16 inch McCormick turbine the generator and Ellicot Governor: 250 H. P. is said to be cabable of being generated, and is electrically transmitted to the shaft house and plant on the hill above. At the time of my visit the turbine shaft had sustained an accident which necessitated the stoppage of work on the shaft, and the mine was therefore full of water.

This shaft is sunk on the apex of the anticlinal on the eastern pitch of the dome. A description of the belts cut below was given me by Mr. McAskill: the following being a summary of the work done:—

The shaft, which is vertical, measures 17 ft. 6 inches x 4 ft. 6 inches inside timbers, and is divided into three compartments.

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*Since my visit the large Cyanide plant has been shut down and tests (with success l results, so I am informed,) with the Bromo-Cyanide process have been applied to concentrates.

At depths of 55 ft., 92 ft., and 102 ft., small veins were cut which thought not apparently of workable size showed the dip of the measures which lie at 19° to the south and from 24° to 45° to the north.

At 130 ft. a belt of ore was intersected which measured 32 ft. in the shaft, and judging by the samples shown me, resembled the Richardson belt, in composition. The total depth of the shaft is 190 ft. The pitch of these veins to the eastward varies from 10° to 16°.

A temporary shaft-house, hoisting frame and sheave are to be shortly replaced by new and larger gear, part of which is on the ground already.

A large engine house 60 ft. x 45 ft near the shaft contains a large double drum Lidgerwood electric hoist and dynamo, installed by the Canada General Electric Co., and one half of a Rand 15 drill air compressor. Two No. one drills are used in the mine. A commodious forge has been built near the engine and shaft houses.

Foundations for 80 stamps are practically completed and 40 stamps are to be installed at once.

This latter building is situated at a considerable height above the shaft; but unfortunately this could not be avoided for several reasons.

The roadway from wharf has been completed during the year and occupies a good location.

GOLDENVILLE.

Royal Oak Mining Co., August 29th, 1902.—Work on this property has been pushed ahead rapidly, the chief and practically all the expenditures having been wisely made underground to ensure enough reserves for large scale treatment.

W. J. McIntosh is still managing the property and Gardner McKenzie is foreman. Sixty men are now employed and the bulk of the work is being done at the western end of the property while the deep shaft on the "Big" Lead has been abandoned and allowed to fill.

The most westerly of the two shafts mentioned in last year's report as being on the "Jumbo" lead, has been sunk to a depth of 215 feet, and the following exploitation has been done in connection therewith. The drift at the 40 feet level has been extended west for a distance of 75 feet, and east of the shaft on the same level, connection has been made with the drift from the old shaft, 100 feet to the eastward. The 100 feet level has also been driven east and connected with the stoping from this shaft, and west for 150 feet. At a distance of 30 feet west of the shaft a cross-cut from the level has been driven north 15 feet to the "Hayden" lead and connects with a shaft on this vein. The bottom level, at a depth of 205 feet from deck, is now 50 feet west, and 38 feet east of shaft and a cross-cut 20 feet west of the shaft has also been driven to the Hayden lead through it.

This tunnel taps the vein below the depths of the present workings. Practically no stoping has been done with the exception of a small block below the 40 feet level. The shaft which is driven on the vein dips north at about 40°, and the belt averages about 18 inches of milling stuff.

On the "Hayden" belt to the south a shaft has been sunk during the year to a depth of 130 feet, and sinking is still in progress to meet a raise just commenced from the end of the cross-cut from the 250 feet level in the "Jumbo" workings, above described.

At 100 feet in the shaft a level is in west for 80 feet, and from a distance of 40 feet in this level blocks of ore have been extracted extending to the shaft above and below the level. On the east side the ore has been taken out by breastwork from the shaft bottom to the surface at a distance of 60 feet from the shaft. A small quantity of the belt, measuring about 50 feet long and 20 feet high has also been removed at the end of a cross-cut from the old workings and at a depth of 100 feet from surface. This place is not connected with the other workings, and is at a distance of 75 feet east of the "Hayden" shaft. This shaft dips north on the vein at an angle of from 40° to 48°.

Pumping is conducted by a small Worthington pump, which lifts from the bottom of "Jumbo" shaft to the 100 feet level and discharges into the old workings from where it is taken to surface by a Cornish pump.

New engine and shaft houses have been built at the shafts on these leads, and a boiler and engine installed for hoisting.

At a distance of about 125 feet north of these works prospecting operations are in progress by the company, and have uncovered several large belts, including the McKenzie and German, measuring 6 feet or more in thickness.

In the mill building foundations have recently been put in for 10 additional stamps, making 20 stamps in all. These are to be installed at once.

Bluenose Gold Mining Co.—A. G. McNaughton, manager, Stephen Monk, foreman, and between 50 and 60 men employed.

Little work was done on the "Springfield" belt since September, 1901, the bulk of operations being confined to opening up new ground to the north, an account of which I give below:—

On the "South" belt small blocks of ore were extracted where the cross-cut from the 113 feet level on the "Springfield" belt tapped the lead.

At the 260 feet level in the Springfield workings and about 30 feet from the shaft a cross-cut was driven north for about 230 feet in length, and has cut several large belts, three of which have been named the "Fraser," "McNaughton" and "Cantly" respectively.

These have all been opened on from this cross-cut, and have been intersected in a lower cross-cut, directly beneath this and driven from the 360 feet level on the Springfield belt.

At the 260 feet level a drift is in west 225 feet, and east 70 feet from the cross-cut.

Considerable work has been done on the McNaughton belt, as follows:—

At a point 30 feet west of cross-cut a raise has been made for a height of 60 feet, and the ore is stoped down to the east face of the level. This level is connected by a raise from the lower level, which is in west 300 feet, and east 185 feet from the lower cross-cut and with the exception of a pillar 30 feet deep by 90 feet long under the 260 feet level the ore is out on the east side of the raise to within 20 feet of the face of the lower level. West of the raise a block has been stoped 170 feet long, and about 70 feet high. All the above mentioned work has been done by the backstoping method, while a strip of ore 20 feet deep on the west side of the raise and 150 feet long has been removed from beneath the upper level by underhand work.

This belt, the ore of which somewhat resembles the Richardson in appearance, measures about 6 feet in width, including slate, quartz and whin.

Rand drills have been replaced by those of the Sullivan pattern, which apparently give great satisfaction.

Stuart-Hardman property.—Mr. Geo. W. Stuart informed me that he contemplated opening a 300 feet shaft on area 743. This is to be 15 feet by 5 feet in size, and the intention is to work the Palmerston and adjoining belts by a system of cross-cutting.

The extensions of these deposits to the west of this area have been little exploited in the past, development work being retarded by the swampy nature of the ground. Nothing, however, has yet been done in the way of commencing actual work.

Wine Harbor.

Plough Lead Mining Co., August 30th, 1902.—M. McGrath, manager, and 25 men.

Work during the past year has consisted in following on its eastern pitch the large shoot of ore forming the "Plough" belt. A point has now been reached some 20 or 30 feet east of the east shaft, which has recently been connected with the workings by sinking and raising.

A series of three small breaks occurring just west of the east shaft with a strike north-westerly and dipping to the east, throw the strata about 11 feet southerly on the east side of the planes of fault. It is supposed that these faults cause besides the lateral, a vertical displacement.

The belt has also been followed on its western extension to the "rise" of the ore as far as the large main fault on the western side of which it is thrown south for 100 feet or more.

This portion of the workings lies on the north side of the main west shaft, which is sunk on a small lead, the strike of which is apparently crossed by the main body of ore.

The ore is won by driving on the south side of the belt, and taking off consecutive slices by a system of overhand stopes.

The east shaft is to be sunk through the ore body, and after removing a triangular block, which will be left on the west side, levels will be driven east through the belt, and operations continued as before.

The "Westcasset" belt, which measures west of the main fault some 14 or 15 feet in width, as well as several other large deposits, intersect the property, and with some little development work will be available as a future supply.

The 15 stamp mill and steam plant are apparently in good order and in constant use.

Old Provincial Mining Co.—S. R. Heakes, general manager, E. Conroy is in charge of the shaft being sunk for the "Plough" lead, and Geo. Hirschfield is at the Caledonia mine.

At the former place the shaft is 300 feet deep and a level has been driven each way—east 20 feet, and west 50 feet. At the end of the west drift a cross-cut has been made north for 25 feet. This is to be abandoned and driving to the southward will be commenced to catch the belt.

At the face of the east drift several small leads and stringers of quartz appear, which resemble in part, those entering the "Plough" belt on the west. A number of these stringers have also been cut in the shaft. A Cornish pump is used to lift the water, which is heavy.

At the Caledonia mine, at 131 feet, in the most easterly of the two shafts opened last year, an incline has been sunk easterly on the belt for 120 feet at an angle of 47°. Part way down this incline a drift is in east 47 feet and at the bottom another is driven east 53 feet.

A fault was encountered in these and passed through. The belt is 8 feet in width, and contains from 1 to 2 feet of quartz as at present exposed.

The mill, which has been enlarged from 5 to 10 stamps is situated here, and since the last visit a 5 drill Ingersoll compressor has been installed. One Ingersoll drill is used at the Caledonia pit, and 2 have been in operation at the "Plough" lead shaft so called; but at present only one is used in this latter place.

A Cameron pump at the bottom of the Caledonia mine raises to top of incline from where a Duplex Northey lifts to surface.

Napier property.—L. W. Getchell has these areas bonded, and R. S. Irving as superintendent, is opening up the old works. Fifteen men are employed. An old shaft on the Moore belt, supposed to be 200 feet deep has been cleaned out to a depth of 175 feet. At the 50 feet level a cross-cut has been driven south for 112 feet across the measures, and exposes a belt of leads some 70 feet wide. The whole width is said to contain roughly from 30% to 40% of crushing material.

At 175 feet in the shaft another cross-cut has been commenced and is in south 12 feet.

From the upper cross-cut, connection has been made with old workings to the west and two shafts on some of the contained belts. The idea is to work the larger portion of this ground by leaving ribs and pillars.

The old Napier mill (13 stamps) and the old plant, including an 80 H. P. boiler and an engine used for hoist, mill and Cornish pump are in use.

ECUM SECUM.

Treasure Island Mining Co., *September 1, 1902.*—This property, which has been opened during the year, is situated on the east side of the Harbor and near the water.

H. T. Harding is general manager, and J. B. McKenzie foreman. Eighteen men are employed.

The shaft which has been sunk on a 12 inch lead dipping to the north at 84°, is 50 feet deep, and is supposed to be near the anticlinal of the district. The shaft measures 18 feet by 4 feet inside timbers, and has two tub-ways. Hoisting is effected by a whim.

One steam drill is used in sinking, and a 5 stamp steam mill is in operation. Ground was broken here in May, 1902.

G. C. Armstrong has also opened the same lead about 120 feet west of above works. His shaft is 60 feet deep and about 50 feet of ground has been drifted on.

The Donovan Mining Co.—On the west side of the harbor operations on the surface are progressing rapidly, so that with a large plant development work may be prosecuted on a large scale.

So far as those portions of the workings that were open, would permit, the following facts were ascertained.

A slope on the south dip of what is apparently a subordinate anticlinal fold, has been driven for 170 feet. A cross cut has been driven from here north and south, and several beds have been cut.

At the foot of this slope, and at a distance south of it, in the cross-cut drifts are open, the first in an easterly direction 180 feet, and the second on what is termed the Galena lead (a 6 inch vein) for 170 feet east and 200 feet west.

A vertical shaft has been sunk 120 feet, and taps the cross cut at a point 28 feet from the bottom of incline. It is divided into three compartments each 4 feet by 4 feet.

Mr. Gillespie, the manager, informed me that the intention is to sink this vertical shaft to a depth of 200 feet, and proceed with development work until one year's supply of ore is blocked out, operations to be confined to three veins. As stated all the work at present is being done on the surface, and consists in the construction of an engine room, 38 feet by 48 feet. Carpenter's shop and blacksmith's forge, 20 feet by 30 feet. Gallows frame, 40 feet high. This latter is over the vertical shaft. The plant which is expected to be in operation by October, includes a Matheson 100 H. P. double drum hoist, cages and trams. An old 8 stamp mill is on the property and is equipped at present with a 4 stamp battery only—used in testing.

C. H. Drillio is foreman, and 20 men are engaged at the mine.

HARRIGAN COVE.

Kent Archibald's Property.—Munroe Archibald, Manager, J. A' Fraser, Foreman, 28 men employed.

The shaft mentioned in last year's report has reached a depth of 125 feet. At 100 feet drifts are in about 100 feet each way and blocks of ore stoped out above the levels to within 35 feet of the surface.

The work has been practically abandoned for the present as a rich strike was made recently to the south. Two shafts 80 feet apart have been sunk here and a small lead on the footwall appeared extremely rich. The western of these two shafts is about 35 feet, deep and small blocks 15 feet and 20 feet have been removed on each side.

Not enough work has been done however to tell much about the continuity or size of the ore.

The 5 stamp mill built last year is still in operation.

The St. Anthony Mine though idle for several months is being kept unwatered.

SALMON RIVER.

The Dufferin Mine Syndicate, September 1, 1902.—This company commenced work here about a month ago with the object, so I am informed by Mr. Maze, the superintendent. of testing the ore left unworked in the mine, partly with a view to its future treatment with the Bromo-Cyanide process.

The company employ Frank Munro as foreman, and have about 40 men on the pay roll. Thirty of the 60 stamps and 12 Frue vanners are kept running, and sufficient of the plant, including the compressor, which supplies five drills, is also being used.

The main vertical shaft is 400 feet deep, and cross-cuts are made both north and south at the 200 feet, and 300 feet levèls, and south at the 400 feet level, though practically no work has been done on the former side of the shaft, which, at the time of inspection, was full of water up to the 300 feet level. Operations now consist in extending the 200 feet level east beyond and under the old workings when a raise will be made to the virgin ground above, and the ore, if satisfactory, extracted. This working place is about 420 feet east of the shaft.

It was here that a man, while timbering, was recently hurt by a piece of rock falling on him. At the time of my visit he was reported as doing well.

At the extreme western face of the 200 feet or bottom level the ore on the south dip is being worked up over the anticlinal fold which turns over to the north dip at a short distance above the level. A main or subordinate synclinal fold, probably the latter, may be observed in the wall of the cross-cut from the shaft in the 200 feet level on the south dip. Several other veins have been driven on and stoped in both levels, but are not being worked at present. The question of the successful and economical treatment of the concentrates by the new process, without previous roasting, is an important one in the Province, and especially so to those mine-owners with ore bodies containing large percentages of refractory gold in the concentrates and slimes, and such tests are in line with the development of recent experiments being carried on in the direction of a high per cent. extraction. It is obvious that in such cases a much smaller plant will suffice than if all the pulp were treated by the ordinary process and without the disadvantage of previous roastings.

TANGIER.

The Tangier Amalgamated Mining Co., Ltd., September 2, 1902.—This mine, which was reported on last year, shut down shortly after the last inspection (in Sept., 1901,) and re-opened under the new company in June, 1902.

Arch. McPhail is still managing the property with a force of 30 men.

Little work has been done underground, though preparations are being made for more extended operations.

At the north face of the cross-cut from the Little South lead, on the 160 feet level, the "Pascoe" lead so-called, has been opened by a drift 40 feet long. This vein is apparently close to the anticlinal.

On the "Nuggety" lead two small blocks of ore are being stoped at the east and west headings of the 160 feet level. Two No. 2 Rand drills are in use here.

Some 600 feet west of the "Nuggety" shaft, and on the same vein, the Kent shaft, 170 feet, has been opened, re-timbered, etc., and drifting has commenced at the bottom level.

A new shaft house has been built here, and some plant (45 H. P. boiler, and a 30 H. P. hoisting engine) that was formerly in use on the Leary lead has been installed.

The pit is unwatered by a steam pump. Since last year a 4-drill Rand air compressor has been installed in the engine house at the "Nuggety" works.

Ten stamps in the mill are now running and the other 10 stamp battery is to be refitted at once.

MOOSELAND.

Preparations were being made here to pump out the Argonaut Company's shaft, and to resume operations on the "Cummings" belt.

MOOSE RIVER.

The Touquoy Mining Co., September 3rd. 1902.—Robert Kaulbach, general manager; Angus McDonald, foreman, and 10 men employed.

A new shaft 90 feet deep has been sunk during the year, on the "Doull" lead, and from 50 feet to the bottom a block of ore 15 feet wide has been worked out on the east side.

At this 50 foot level a drift is in 20 feet west, and a cross-cut has been driven north 27 feet to the Colonial shaft.

The Touquoy shaft 30 feet west of the Colonial shaft, has been continued on the large slate fissure for over 200 feet.

At 180 feet, an upraise has been made to meet a shaft driven from the surface on the "Doull" lead.

A block of ore has been stoped here for about 50 feet in length and 30 feet high.

Some very bad ground was encountered in the upraise, probably caused by the fissure crossing the strata.

At a depth of about 70 feet, a new shaft on the "Taylor" lead has been connected with the Touquoy shaft by a cross-cut 125 feet long. Mine and mill were running night and day shift at the time of my visit but there was talk of shutting down temporarily in the near future.

Gladwin Bros.—These areas are bonded from the Colonial Company, and J. Reynolds, as manager, has sunk a pit 25 feet on a 5 foot belt with several small leads exposed.

A small vertical boiler and hoist and Cornish pump comprise the plant. Work was commenced in August.

W. Reynolds with 2 men is tributing on the "Moleskin" lead. Shaft 40 feet deep and sinking in progress.

A. McGregor has a few men working on the Montreal property.

CARIBOU.

Baltimore and Nova Scotia Mining Co., September 3rd, 1902.—L. W. Cetchell, manager, Fred Darragh, foreman, and 42 men on double shift.

Extensive improvements and enlargements on the surface and corresponding development underground are noticed since the last visit to this mine.

The main vertical shaft is now 700 feet deep. It intersects the lenticular fissure vein on which the mine is situated at the 500 feet level. This vein crops about 140 feet north of the shaft collar and at the 700 feet level it is connected by a cross-cut 41 feet in length.

The 400 foot level is in west 160 feet, and east about 400 feet.

The 500 foot level is in west 600 feet and east about 640 feet. At 25 feet from this east face a cross-cut is driven south 150 feet, and at a point 100 feet from its head a drift is in east 100 feet, and west 25 feet. At the east face of this drift another cross-cut has been driven north 125 feet. No ore was observed in any of these cross-cuts or drifts from the 500 feet level or in fact in the level itself beyond a point about 450 east of shaft. No level has been driven at 600 feet, but the bottom or 700 foot level is in west 230 feet, and east 160 feet.

Blocks of stoping have been done as follows:—

A small block about 45 feet by 25 feet west of shaft above 400 foot level.

All the ground between shaft and west 400 feet level and to a point in 500 feet level 200 feet west of shaft.

Above east 500 feet level from a point 65 feet east of shaft to a point 430 feet east of shaft. This block extends up to the 400 feet level at a distance of 260 feet east of shaft in that level.

A winze has been sunk from the 500 feet level 265 feet west of shaft and blocks of ore removed on east side for 150 feet in length by 50 feet in height, and on west side of winze, at the bottom, 40 feet by 40 feet.

Above 700 feet level, both east and west, blocks about 150 feet long by 20 or 30 feet high have been stoped out.

It would appear that the vein is in the form of a chimney or one shoot dipping southerly at 45° and pitching west at about 30° and variable in height and thickness.

The mill is admirably arranged. In 2 of the 3 compartments in the shafts, Matheson cages are used carrying 1,300 lb. ore cars, one dropping as the other raises (the counterbalance system of drums being in use.) These cages dump on to the top floor of the mill where the rock is separated by two men and sent through the grizzlys and rock-breaker to the 300 ton ore bins, the black rock going through a separate chute and hopper into the dump car. Broken ore is passed through "Challenge" automatic feeds into the batteries which are of the underfeed pattern, with 900 lbs. stamps dropping 80 times per minute. The shoes and dies are of chrome steel, though "Kuppel" parts are also used. The screens are No. 28 mesh. Three boilers, two of 100 H. P. and one of 80 H. P. are used, with wood as fuel. A new 125 H. P. Goldie and McCullough engine and the double drum hoist are installed in the engine room; also a new 10 drill Ingersoll compressor for drills, pumps, etc. Five drills are used on each shift at present, and these will be increased to six per shift in October, when the mill will also be running double shift. The 40 stamps are only running 10 hours in 24 at present.

LAKE CATCHA.

John H. Anderson and Frederick Hanright, working here during the year, have produced about 600 ounces.

NORTH BROOKFIELD.

Brookfield Mining Co., October 1st, 1902.—W. L. Libbey, manager; S. Crowe, foreman.

About 80 men employed in night and day shifts. This property has been bonded, so the manager informed me, to an American Co.

All the work during the past year has been confined to the ground below level No. 6. The other levels have been extended until the following distances west of the incline have been reached:

No. 8, 550 feet where it intersects the "Mill" lead.

No. 9, 600 feet.

No. 10, about 400 feet.

The incline has also been sunk to a depth (measured on the slope) of 160 feet below level No. 10, and at 120 feet below this level No. 11 has been driven west for 170 feet. No. 10 level has also been driven east of the incline for 140 feet. During the year considerable ore has been stoped between the levels.

The "Mill" lead, a "main" vein, conforming to the strata and whose line of intersection with the fissure roughly marks the eastern limits of the workings has been followed in No. 8 level to a point about 40 feet west of its junction and shows about 18 inches of quartz in two veins lying closely together.

In the main shaft at 100 feet from the surface this belt was followed for some 30 or 40 feet, and at this point measured about 8 feet 6 inches of quartz.

Another "main" lead similar in appearance to above and aggregating about 7 inches of quartz has been driven on from levels, Nos. 8, 9, 10 and 11; and tests have been taken out.

This vein intersects the "fissure" on a line parallel to the "Mill" lead, though at a point several hundred feet nearer the shaft.

The question whether these interstratified deposits carry workable values is an important one to the district, as hitherto they have been practically unproved at these depths. Just above No. 4 level a No. 6 Cameron "Lifter" pump takes the discharge from a Northey (3 inch suction and 2½ inch discharge) at No. 9 level, to which point the sump is unwatered by a Cameron prospecting pump (2½ inch discharge.) These pumps are now run by compressed air.

On the surface several changes and improvements have been made in the plant.

The engine house has been enlarged and a new 100 H. P. (Truro foundry) boiler and a Rand 8 drill compressor have been installed therein, the latter machine taking the place of the old compressor.

The electric lighting plant has also been placed in this building.

Three machine drills of the Rand (Slugger) pattern are used on each shift.

In the mill building the foundations for the mortars have recently been changed.

The old ones which had been built of green hemlock had become rotten, and have now been renewed by seasoned spruce.

There is some talk of adding 20 more stamps to the mill. If this is done, the foundations will be constructed of masonry.

A Wilfley table and an Ostermoor concentrator have replaced those of the Improved Triumph pattern formerly used.

FIFTEEN MILE BROOK.

Lowe Bros. et al, October 1st, 1902.—G. A. Irwin has replaced J. McGrath as manager, and 16 men are now working below and on the surface.

During the year the shaft has been sunk an additional 30 feet making it 100 feet in all. At 70 feet a level was driven easterly for 70 feet on the fissure vein.

At about 70 feet from the shaft a fault occurs and cuts the lead off although beyond this fault a small vein appears in the belt. This fault pitches at a low angle westerly and intersects the shaft near the bottom. The bottom or 100 feet level is in easterly 60 feet and the ground between the levels has been stoped out by the underhand method.

On the surface a 5 stamp mill has been erected, the parts having been brought from Whiteburn. A new cook house and stable have also been built.

A few days previous to my visit an accident occurred at this mine by which James Boland broke his left leg below the knee, and Wm. Martin sustained a severe shaking up.

The bottom section of the ladderway was injured by the shots and gave way when both men got on it.

Bad rock occurs on the hanging wall of the shaft and plenty of timber should be used and the dangerous places carefully watched.

LEIPSIGATE.

Mic-Mac Mining Co., October 2nd, 1902.—T. W. Moore, manager, and J. Fitch, foreman. Twenty men are employed.

The main shaft has now been deepened to 300 feet and the levels at that depth have been broken out. It is the intention to sink and drive so as to open up reserves of new ground.

The 100 feet level has been driven 315 feet south-westerly on the fissure, and about 210 feet north-westerly, also on the vein; and the 200 feet level has been driven for several hundred feet each side of the shaft. The ore has been practically all stoped between the levels though considerable ground is in sight between the extension of the shaft below the 200 feet level and the level on both sides of the shaft.

A new vein has been opened close to the south-west shaft, though sufficient depth has not been gained to tell its extent yet The same plant is on the ground as formerly and the new foundation is nearly completed under the batteries.

Nova Scotia Development Co.—Work on this property was stopped at the end of January, 1901, and the mine allowed to fill. It was pumped out again, however, in May, and a little work done at the east end. It was finally shut down in July and has remained full of water till the present time.

The "German" shaft has not been deepened, but the bottom level has been extended to a distance west of shaft 180 feet and east 310 feet. At 210 feet east of main shaft—the old shaft mentioned in last year's report, was intersected, the old workings having been broken into some 30 or 40 feet west of this point.

No additional stoping was done during the year, but frequent tests were made systematically throughout the mine, and the results were, so I was informed, highly satisfactory. Mr. Crowe is still in charge of the property.

Home Gold and Copper Co.—This company is also under the management of C. N. Crowe, and 17 men are employed.

Work was commenced on February 1st, on the old Gilmore shaft, situated on the same fissure vein as the two last mentioned mines, and 750 feet west of the "German" shaft, so called, of the N. S. Dev. Co.

When pumped out the shaft was found to be 65 feet deep and a block of ore 65 feet long had been extracted on the east side, and 10 feet of stoping near the shaft bottom was also done on the west side. The shaft has now been deepened to 150 feet, and at 100 feet a level has been driven west 30 feet, and east 230 feet. The pay streaks, as in the "German" works, dip at about 16° to the east, and in fact the general characteristics of this whole fissure vein as exposed at intervals, for over a mile in length, and for depths up to 300 feet are remarkably similar and regular.

A shaft house, cook house and stable have been built and a small boiler and hoist have been installed at the shaft.

The "Owen" 5 stamp mill is being used for testing the development work.

All of which I respectfully submit.

D'Arcy Weatherbe, C. E.,
Mines Department.

Halifax, November 17th, 1902.

MISCELLANEOUS MINERALS.

IRON.

DOMINION IRON AND STEEL COMPANY.

The operations of this company are now fairly under way, and a brief note of their plant may be of interest.

The site of the works covers an area of 393 acres fronting on Sydney Harbor. There are two piers, one, a low level general freight pier, is 1,047 feet long with four Hunt loading and discharging towers with a capacity of 1,200 tons of steel or pig a day. The other pier is 1,290 feet long and 50 feet above high water mark, and is used for unloading ore and limestone. Five Hoover Mason hoisting machines take the material from the vessels and dump into hopper cars on the pier. A trestle carries to cars to the top of the consumption bins. From the bins the ore passes to a motor driven scale car which transfers it to the furnace skips.

When the consumption bins are full the ore or limestone is stored in 56 pockets outside the bins when they are taken by buckets and distributed as required.

The ore used is a red hematite from Bell Island near St. John's' Newfoundland. The ore contains over 50 per cent. of iron, is low in sulphur but rather high in silica, alumina and phosphorus. When a low phosphorus pig is required small quantities of Cuban or other low phosphorus ore is mixed with it. No mixture of ore is necessary when the pig is converted into steel as the phosphorus ore can be eliminated in the open hearth converters. The limestone is brought from the West Bay, Marble Mountain, and from St. George's River, the former distant 85 miles by water, and the latter 20 miles by rail.

The coal comes from the mines of the Dominion Coal Company, distant from 6 to 22 miles. The coal is crushed, sized, and washed by the jig system. Experiments are being made to see if any advantage accrues from compressing the coal in a mould and introducing it into the oven in a single block. The ovens are of the Otto Hoffman by-product type, being heated by about 50 per cent. of the gas produced. The coke oven plant is equal to an output of 1,400 tons a day of thirty-six hour coke. From the gas, tar is first separated, then sulphate of ammonia is manufactured from the residue.

There are four blast furnaces with a combined capacity of 1,000 tons a day. The gas from the furnaces is used to heat the blast and for steam. The blast furnace stacks are 20 feet in diameter and 85 feet high. There are four Kennedy two pass stoves for each furnace, the stoves being 21 feet in diameter and 85 feet high. There are all necessary boiler houses, with boilers, engine house with blowing engines, pump house and pumps. Water is obtained from the harbor, and from the Sydney River. The metal from the furnaces is partly cast in sand and partly run into ladles. That run into the latter is cast in machine moulds.

There are ten Campbell tilting basic open hearth steel furnaces, each fifty tons capacity. The output is estimated at 800 tons a day. The steel is poured into moulds, from which the ingots are freed by machiners, and pass to the blooming mill, and into the soaking pits. The ingots as required are removed by a 10 ton electrical crane and presented to the approach table at the rolls. Billets from eight inches square down to 3⅞ inches square, and slabs from 16 by 5 inches down to 6 by 2 inches can be produced.

If the intention of having a rail mill is carried out, the blooms for rails will pass directly from the blooming mill to the rail mill. Electric power is extensively used for lighting and operating machinery in all parts of the work. The railway system at the works embraces 18 miles of track, with full equipment of locomotives, hoppers, ingot, billet and other cars.

In this connection the following memo. from the **Engineering** and **Mining Journal of New York** may be of interest:

DESULPHURIZING PROCESS FOR COAL BEFORE COKING.

By Oscar Daube.

A difficulty in the production of good metallurgical coke is frequently the high percentage of sulphur in coal that would otherwise make an ideal coke. Many efforts have been made to eliminate this objectionable element, and have been unsuccessful, particularly where the sulphur occurs in organic combination.

Results of tests recently made for the Dominion Iron and Steel Company in connection with the Otto-Hoffman by-product coke ovens at Sydney, having for its object the reduction of sulphur in the coal, are of interest. It is well known that all Cape Breton coals carry an excess of sulphur, running on an average about 2½ per cent. It is otherwise a fair coking coal, although from being somewhat high in volatile matter, the coke is porous and does not bear well in modern furnaces.

An average analysis of unwashed coal shows:—

Carbon, 75.10 per cent.; ash, 5.84; sulphur, 2.75. The sulphur by washing is reduced to about 1.35 to 1.50 per cent., and the resulting coke generally runs from 0.10 to 0.15 per cent. higher than the coal, showing that no material reduction of sulphur in the coking occurs after washing the coal. These observations and figures were obtained from the Dominion Iron and Steel Company, but it may be stated that coal from the same seam, washed and supplied to the New England Gas and Coke Company, Everett, Mass., and coked in the same type of oven, runs on an average 2.5 per cent. sulphur in the coal and 2.25 per cent in the coke.

The average yield of coke in eight consecutive days was 67 per cent. coke, 7 per cent. breeze, the coke showing an average of 78.96 per cent. carbon, and 1.44 per cent. sulphur, as follows:—

Carbon.	Sulphur.
75.80	1.33
76.87	1.59
80.82	1.67
83.16	1.39
79.39	1.46
75.20	1.23
78.24	1.53
Average 78.96 per cent.	Average 1.44

These figures are given in order that they may be compared with results obtained after the desulphurization process was applied. In the first test a charge of 12,300 pounds of coal was used. Half of the coal was washed and half unwashed. The charge as mixed, contained 1.66 per cent. S. The time occupied in the process was 1 hour and 10 minutes. After desulphurizing the charge was coked, yielding 67 per cent. coke and 2½ per cent. breeze. Analysis of the coke showed carbon 89.25 per cent.; volatile matter, 3.7 per cent.; sulphur, 1.27 per cent., indicating a reduction of 0.39 per cent. in the sulphur contents. A second test was made with 12,600 pounds of wet coal, containing 9.4 per cent. moisture and 1.74 per cent. S. The resultant coke (72.5 per cent. yield) contained carbon 87.6 per cent.; volatile matter 4.4 per cent.; sulphur, 1.28 per cent., showing a reduction of 0.46 per cent. in the sulphur contents.

The tests were made without any change in the ovens, and after desulphurizing the charge was coked as under ordinary conditions.

The desulphurizing process does away with the expensive washing plant and avoids loss in coal, and the charging of wet coal into the hot ovens. It also prevents the dilution of the gas liquor by the moisture in the coal coming over as condensed steam from the oven into the condenser.

Some work has been done at a number of points in Cape Breton on recently noticed iron ore indications, but the department is not advised that workable deposits have been reported from them. Some attention is being directed to the Mira district where a considerable tract of country carries iron ore beds of good quality.

In Nova Scotia proper, further work was done at Arisaig and Nictaux confirming the extent of the deposits. Montreal capitalists have taken over the Londonderry mines and works, and are engaged in putting them in order. It is expected that in the spring of 1903 the two furnaces will be again in operation.

In the spring, reports were received of the discovery of rich iron ore in the River Phillip district, Cumberland County. The ore on analysis gave—

	SAMPLE A.	**SAMPLE B.**
Metallic Iron	**68.740**	**67.50**
Manganese	....	......
Phosphorus	**Trace**	**None**
Sulphur	**.005**	**.008**
Silica	**1.100**	**1.630**

The returns of the Nova Scotia Steel and Coal Company show 15,214 tons of brown ore mined at Brookfield and used at Ferrona. The rest of their furnace supply came from their mine at Bell Island, Newfoundland. Their works in Pictou County have been maintained in their usual good order. At North Sydney steady progress has been made with their new iron and steel plant, branch lines, piers, ovens, etc.

The following analysis of Nova Scotia iron by the Canadian Geological Society, may be of interest:—

1.—Hematite. From the Arisaig district, Antigonish County, Province of Nova Scotia, in which locality there occurs an extensive deposit of a dark-reddish-brown to blackish-brown oölitic hematite, upon which numerous trial pits have been sunk on the East Branch of Doctors Brook and on its tributaries Iron and McInnes Brooks.

(*a*.) A fair average sample of the material from four trial pits on or near Campbell's Brook, a tributary of the East Branch of Doctors Brook, was found by Mr. Wait to contain:—

Metallic iron	44.75	per cent.
Phosphorus	0.84	"
Sulphur	0.008	"
Insoluble matter	25.76	"

(*b*.) A fair average sample of the material from eight trial pits on or in close proximity to Iron Brook, was found by Mr. Wait to contain:—

Metallic iron	45.30	per cent.
Phosphorus	0.60	"
Sulphur	0.003	"
Insoluble matter	26.33	"

(c.) A fair average sample of the material from five trial pits on or near McInnes Brook, was found by Mr. Wait to contain:—

Metallic iron	48.77	per cent.
Phosphorus	0.42	"
Sulphur	none	"
Insoluble matter	22.56	"

Limonite. From Grand River Barrens about one mile south west of Grand River Falls, Richmond County.

Metallic Iron	59.89	per cent.
Phosphorus	0.375	"
Sulphur	none	"
Insoluble matter	0.98	"

Magnetite. From old French Road, two miles easterly of the Mira Roman Catholic chapel, Cape Breton County.

Fine grained massive dark-grey Magnetite.

Metallic iron	61.45	per cent

Manganese There is little to report beyond the operations of the New Ross Mining Company. I append a memo on the mine from Mr. D. Weatherbe, who visited the locality last summer:—

NEW ROSS, August 19, 1902.

The mining of valuable mineral in the eruptive granite formation is a unique operation in this Province, yet such a proposition is being broached by the company.

This property, on which the mineral (Maganese) is not reserved to the Crown, and which therefore pays no royalty, is situated, by road, about 9 miles from the village of New Ross, in Hants Co.

The last 5 miles of this road is well nigh impassable for a wheelep vehicle.

The claim joins on its east boundary the lands of the Church of England, commonly known as the "Dean and Chapter grant."

The surface here is rough and covered with drift granite boulders and the soil produces only a scrubby vegetation.

The company is called the New Ross Mining Co., and obtained

Operations were begun by the Munro-Thompson Ore Reduction Co., near Westville, in Cumberland Co. I give Mr Cameron's memo on their operations.

The following is a brief report of what has been accomplished at Wentworth:—

The company has concentrated at the mine a coffer dam, about 200 feet long and eight feet high, on which they have constructed a building 25x50 feet. In this building they have a 12 horse power engine, a 20 horse power boiler, also a friction hoist and a pump with a 3 inch suction and a 2 inch discharge.

They have also some tracks and a few cars here, and have done about 500 feet of underground tunnelling, and have mined about 2,000 tons of ore.

The vein or body of ore is about 100 feet wide, with an average thickness of about 4 feet. It runs east and west with a slight dip north.

About one-third of a mile south of this opening they have uncovered another seam of about the same thickness and about 120 feet wide, The company has at this place a building suitable for a blacksmith shop and a tool house.

They have constructed a building 25x50 feet, in four elevations, for the purpose of leeching. In it there are 8 tanks, all piped for water, steam and air. Next to this building there is another in which there are crushed ore bins, and underneath which they have their main driving shafting.

Next to this building there is one called the machinery building, which is about 30x60 feet. In this there is a new 100 H. P. boiler, and 85 H. P. engine, a Blake crusher, with a capacity of 100 tons per day, and the foundation for a 100 ton pulverizer, which is now on the ground. Back of this building there is a large shed for their roasters, one of which is already built. South of this there is another building which is to be used for a smelter, the shell of which is already built, and which they expect to have in operation with the whole of the plant early in 1903.

GYPSUM.

The operations of the Windsor Gypsum Company were extended during the year and an increased shipment effected. Judging from enquiries made, there may be an increased interest taken in the export of this mineral.

The following analysis from the Canadian Geological Survey report will be found interesting:—

1.—Clay. From a deposit about six miles from Louisburg and not far from the sea shore, Cape Breton County, Province of Nova Scotia. Examined for Mr. W. Todd.

A light bluish gray, non-calcareous, plastic, somewhat difficult fusible clay, which when burnt assumes a light reddish-brown colour. It might advantageously be employed for the manufacture of ordinary building brick, drain tiles, and all kinds or common earthenware.

7.—Graphite, Disseminated. From Glendale, River Inhabitants, Inverness County, Province of Nova Scotia. Examined for Mr. James MacIntosh.

The sample examined, contained 31.8 per cent. of graphite. A specimen from the same locality, collected by Mr. Hugh Fletcher in 1879, was found by the writer to contain not more than 13.96 per cent. of graphite, as recorded in Rep. Geol. Surv. Can., 1878-79, p. 2 H.

16.—Shale. From Hay Cove, Red Islands, Richmond County, Province of Nova Scotia. Examined for Mr. M. L. MacNeil.

The material sent for examination consisted of a pale yellowish-greenish, non-calcareous shale, which when reduced to fine powder and moistened with water afforded a slightly plastic mass. This when burnt assumed a light reddish-brown colour. The burnt mass was with difficulty fusible at a high temperature. This material would be suitable for the manufacture of a fire-brick in which a very high degree of refractoriness was not called for.

BORING MACHINES.

DR. E. GILPIN,

Deputy Commissioner Public Works and Mines.

SIR,—I beg to report on the Government Core Drills, and to submit the following memorandum of progress during the fiscal year.

The following is a list of the machines now in possession of the Mines Depaatment:—

No. 1.—A "Calyx" steam drill with a capacity of 1,000 feet.

No. 2.—A steam diamond drill boring to guaranteed depth of 800 feet.

No. 3.—A hand power diamond drill which bores to 350 feet.

No. 4.—Is the same as No. 3.

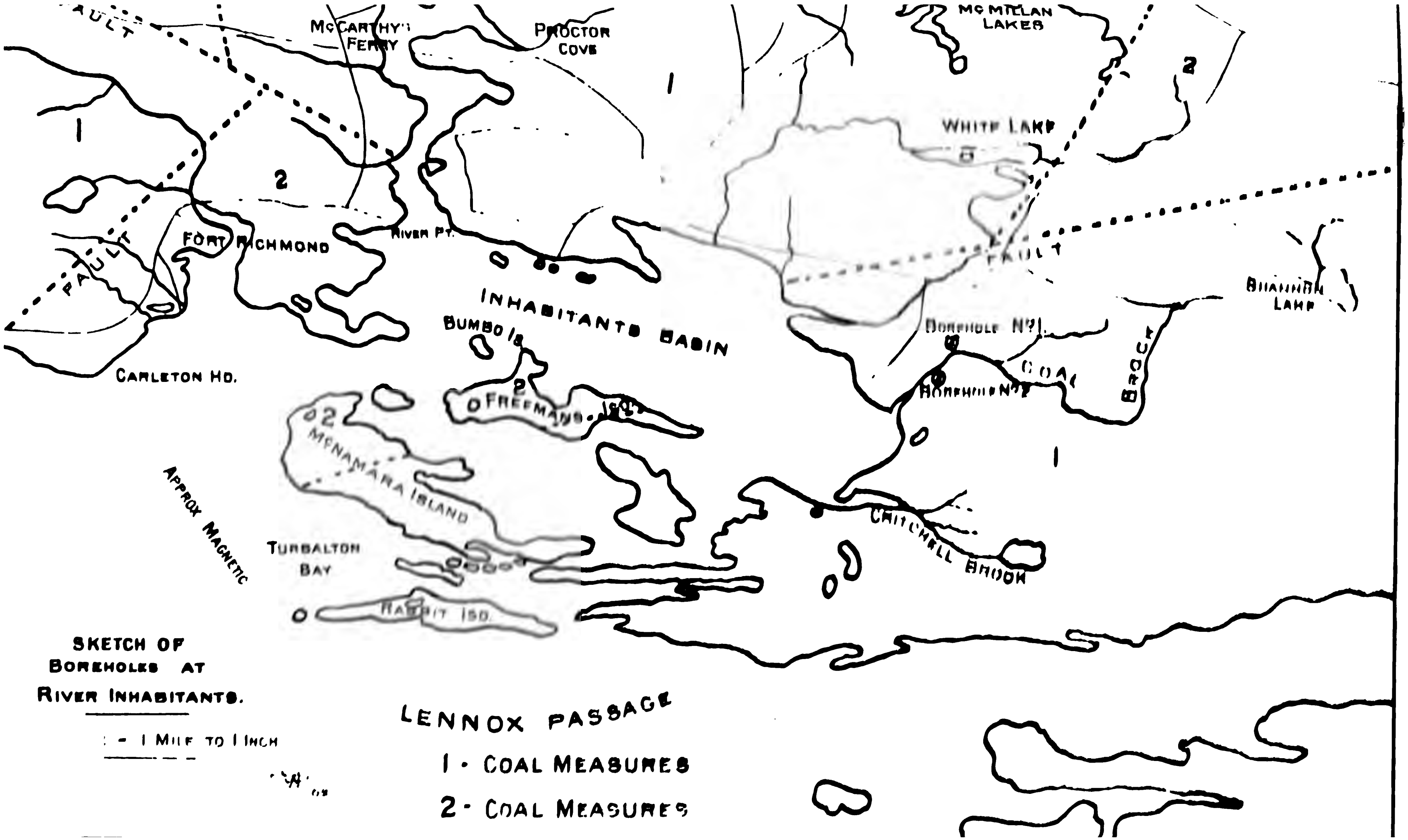
No 5.—A duplicate of No. 1 drill.

No. 6.—This drill recently purchased by the Department is also on the "Calyx" pattern and bores to a depth of 3,000 feet. The largest core cut by it is over 6 inches in diameter. It contains several improvements in construction over Nos. 1 and 5.

Another "Calyx" hand drill boring to 300 feet has been ordered, but has not yet arrived.

ITINERARY AND OPERATION.

Drill No. 1.—No. 1 drill after completing No. 2 hole at Kennetcook (see Mines Report, 1901,) was transported to River Inhabitants Basin, in Cape Breton, in December, 1901. Boring was commenced on March 11th, 1902, at a point on the north bank of Coal Brook (see hole No. 1 on plan 1, RIVER INHABITANTS), near the proved outcrop of a seam approximating 3 feet in thickness. The following record shows the strata passed through in this hole, which was finished on April 23rd, 1902.


SKETCH OF
BOREHOLES AT
RIVER INHABITANTS.
1 MILE TO 1 INCH
LENNOX PASSAGE
1 - COAL MEASURES
2 - COAL MEASURES
FAULT
McCARTHY'S FERRY
PROCTOR COVE
McMILLAN LAKES
WHITE LAKE
1
2
FORT RICHMOND
RIVER PT.
CARLETON HD.
INHABITANTS BASIN
BUMBO IS.
FREEMANS IS.
McNAMARA ISLAND
TURBALTON BAY
RABBIT ISD.
APPROX MAGNETIC
BOREHOLE No. 1
BOREHOLE No. 2
COAL
BROOK
BRANNAN LAKE
CHITCHELL BROOK

SECTION OF HOLE NO. 1.

MATERIAL.	Thickness of Strata.		Total Depth from Surface.	
	Ft.	In.	Ft.	In.
Surface Material	10		10	
Shale	19		29	
Coal		4	29	4
Shale	17	6	46	10
Sandstone with calcareous and shale bands	24		70	10
Bituminous shales	3	2	74	
Shale	7		81	
Layers of shale and sandstone	41		122	
Shales	44		166	
Sandstone with thin bands of Argillaceous shale and pyritous layers	22		188	
Sale with alternate layers of sandstone	262		450	
Shales	70		520	

In the above hole calcite and fossil shells showed at 100 feet. The dip changed from 30° to 45° and as the above mentioned seam which should, if regular, have been intersected within 250 feet was not encountered at all, it is probable that a fault occurs.

At the suggestion of Mr. Hugh Fletcher of the Geological Survey, the drill was then moved to the westward about 800 feet, (See hole No. 2 on plan 1), and boring was commenced in the bed of the river on Sept. 18th, 1902. The rock at this 2nd hole dips westerly at a flat angle.

SECTION OF HOLE No. 2.

MATERIAL.	THICKNESS OF STRATA.		TOTAL DEPTH FROM SURFACE.	
	Feet.	Inches.	Feet.	Inches.
Blue clay and hard broken sandstone	8	4	8	4
Dark soft, argillaceous shale	10		18	4
Grey sandstone, coarse and hard	5		23	4
Dark argillaceous shales and fossil shells and ironstone bands	46		69	4
Light colored shale	8		77	4
Dark argillaceous shale	58		135	4
Light colored shale	20		155	4
Dark argillaceous shale	13	2	168	6
Bright coal	1	8	170	2
Hard grey sandstone, with bands of dark shale and small coal seams	50		220	2
Dark shales and sandstone bands	33		253	2

SECTION OF HOLE NO 2.—*(Continued.)*

MATERIAL.	THICKNESS OF STRATA.		TOTAL DEPTH FROM SURFACE	
	Feet.	Inches.	Feet.	Inches.
Coal	.....	4	253	6
Grey sandstone with shale bands	30	.....	283	6
Light shale with ironstone bands	17	.....	300	6
Hard shaly coal	1	6	302	.....
Light shale	8	.....	310	.....
Hard grey sandstone	29	.....	339	.....
Coal, hard and impure	.....	6	339	6
Light Argillaceous shales	4	.....	343	6
Light grey sandstone, banded and striped	28	6	372	.....
Dark shale containing fossil shells	5	.....	377	.....
Fine grained, light grey sandstone	6	.....	383	.....
Dark grey shale, full of fossil shells and containing fine bands of ironstone	12	.....	395	.....
Light grey sandstone, with occasional thin layers of shale, sometimes bituminous	61	.....	456	.....
Grey and greenish shales	21	.....	477	.....
Dark argillaceous shales with small fibres of calcspar and pyrites, also bands of ironstone	53	.....	530	.....
Soft light sandstone with hard bands	25	.....	555	.....
Dark argillaceous shales with ironstone bands	18	.....	573	.....
Red shales with grey iron bands	8	.....	581	.....
Dark shales	3	.....	585	.....
Soft light sandstone with shaley bands	49	.....	634	.....
Dark argillaceous shales	45	.....	637	.....
Hard light colored micaceous sandstone	41	.....	678	.....
Dark argillaceous shales more or less bituminous, and containing fossil plants and shells	45	.....	723	.....
Soft grey sandstone	4	.....	727	.....
Dark argillaceous shales showing calcspar	14	.....	741	.....
Grey sandstone with dark bands	3	.....	744	.....
Dark fossiliferous shale	35	.....	779	.....
Hard grey sandstone	4	.....	783	.....
Very dark shales, containing fossil shells and plants	34	.....	817	.....
Dark shale with reddish bands	3	.....	820	.....
Dark shales showing fossil and containing dark coaly bands	58	.....	878	.....
Light shales with small reddish bands and streaks of ironstone	33	.....	913	.....
Fine grey sandstone	4	.....	917	.....
Bituminous shales and bands of sandstone	32	.....	949	.....
Hard grey sandstone	3	.....	952	.....
Light coaly shale	5	.....	957	.....
Hard grey sandstone with fibres of calcite	22	.....	979	.....
Dark coaly shale with fossils	27	.....	1006	.....
Hard grey sandstone with calcite seams	14	.....	1020	.....

The hole was' finished on August 16th, 1902, and through delays for various causes, the actual time employed in boring was 57 hours, making the rate of boring per hour equal to 1.7 feet, the total cost of hole was $1,822.50, made up as follows :—

Labour and board	$1,217	60
Management, etc	459	00
Fuel (coal)	63	00
Shot	67	50
Oil, waste, lighting, etc	15	40
	$1,822	50

Thus the cost per foot was $1.77.

The drill was then moved to Glendale, in Inverness County, and boring commenced on September 18, 1902, on the east branch of the River Inhabitants. The different strata penetrated were as follows:—

MATERIAL.	THICKNESS OF STRATA.		TOTAL DEPTH FROM SURFACE.	
	Feet.	Inches.	Feet.	Inches.
Surface material	15	....	15	.....
Dark shale (fossils)	40	.....	55	.....
Soft red shale with limestone nodules	19	.....	74	.....
Dark shales, showing lime in nodules and veins	32	.....	106	....
Hard grey sandstone with calcite veins	8	....	114	.....
Dark banded shale	77	.....	191	.....
Hard red shale with grey stripes	22	.....	213	.....
Dark banded shale	42	.....	255	....
Various colored shale with harder nodules	21	.....	276	.....
Hard dark shale	16	.....	292	.....
Red and green mottled shale (calcareous)	5	....	297	....
Dark argillaceous shale with calcite veins	12	.....	309	.....
Hard grey fine grained sandstone with calcareous layers	8	...	317	.....
Dark shale with reddish bands	90	.....	407	.....
Dark coaly shales	10	.....	417	.....
Red shales with calcite veins	9	.....	426	.....
Various colored shales	68	.....	494	.....
Grey sandstones with dark shaley bands	26	..	520	....

This hole was finished on October 15th, 1902, and as far as the experience with these machines has proved, it is a record drilling operation, both as to time and expense. As will be seen from above section, 520 feet were bored and 165 hours were taken in the work, making 3.1 feet bored per hour.

The hole cost $0.93 per foot, as will be seen from the following account of expenses:—

Men's labour and board	$365	16
Management, etc	72	00
Fuel	26	00
Shot	18	00
Oil, waste, etc	3	80
	$484	96

DRILL No. 2.

An unfortunate series of accidents, combined with bad ground prevented progress in the explorations at the Drummond Colliery, and shortly after the intersection of the 9 foot seam, mentioned in last year's report, operations were abandoned, and the drill remained idle until the end of the fiscal year, shortly after which it was moved to a point near the Fox Brook road, about 2 miles from the Drummond Colliery, and boring was commenced there.

DRILL No. 3.

Between October, 1901, and January, 1902, two holes were bored with this drill at the head of Lingan Basin, and the Mullins seam, so-called, was intersected at the following depths:—

HOLE No. 1.

MATERIAL.	THICKNESS OF STRATA.		TOTAL DEPTH FROM SURFACE.	
	Feet.	Inches.	Feet.	Inches.
Shales	2	......	2	......
Coal	1	......	3	......
Shales	22	......	25	......
Coal with a parting of 1½ inch in the seam	4	6	29	6

HOLE No. 2.

MATERIAL.	THICKNESS OF STRATA.		TOTAL DEPTH FROM SURFACE.	
	Feet.	Inches.	Feet.	Inches.
Clay	9	6	9	6
Shales	15	......	24	6
Coal	1	1½	25	7½
Shales	22	......	47	7½
Coal	4	10	52	5½

For some months the drill was idle; but in the spring of 1902 it
was taken by Mr. A. J. McDonald to prove the extent of the basin to
f Sydney. I have been unable to obtain from him any
rations there.

DRILL NO. 4.

This drill was taken from Musquodoboit to Middle Stewiacke, and boring was commenced on April 3rd, 1902. Three bore-holes were bored, the deepest being 445 feet, but nothing of value was discovered. Though this is a hand drill and only guaranteed to bore 350 feet, 445 feet was done in this latter hole and during the last 100 feet of boring the motive power used was steam. A record of the cost furnished me by Mr. Creelman, the operator, reads as follows:—

Labor	$169 50
Bond	94 92
Management, etc	139 50
Use of engine	38 00
Truckage, freight, oil	6 00
Fuel (say)	20 00
Carbons (say)	300 00
	$767 92

Thus it appears that the cost per foot was $1.72.

Drilling stopped in October and the drill was taken to South Maitland.

DRILL NO. 5.

On September 30th, this drill, which has been boring continually in the same hole, (See plan 2, HANTSPORT), reached a depth of 727 feet and boring was still in progress with the intention, if necessary, to go to 1,500 feet. For this purpose 500 extra feet of rods was procured.

The following record of the hole shows the strata passed through:

Material.	Thickness of Strata.		Total Depth from Surface.	
	Feet.	Inches.	Feet	Inches.
Sandstone	8	......	8	......
Slate	4	......	12	......
Sandstone	16	......	28	......
Clay	3	......	31	......
Sandstone	11	......	42	......
Clay	11	......	53	......
Slates and sandstone	66	......	119	......
Slate	5	......	124	......
Sandstone	5	......	129	......
Slate	10	......	139	......
Sandstone	6	......	145	......
Slate	8	......	153	......
Sandstone with several thin bands of clay and bituminous shale	27	......	*180	......
Slate	8	......	188	......
Sandstone	34	......	222	......
Slate	5	......	227	......
Sandstone	47	......	273	......
Slate	4	......	277	......
Sandstone	15	......	292	......
Carbonaceous shales	19	......	292	......
Slate, sandstone and clay	10	......	321	......
Slate	14	......	335	......
Sandstone	12	......	347	......
Hard shales with small band of sandstone	28	......	375	......
Hard shales on slates generally dark and fossiliferous in places	375	......	750	......
Hard slaty strata	72	......	822	......
Sandstone with bands of slate	163	......	985	......

Thin bituminous layers occurred at the following depths 212 feet 238 feet and 267.

DRILL NO. 6.

During the summer a new Calyx drill with a capacity of 3,000 feet and cutting a hole 7⅝ inches in diameter was purchased, and delivery was taken on September 12th.

The drill was loaned to a company of Pictou County operators who intend testing the unproved ground just north of the "New Glasgow Conglomerate," so-called, where, if new workable coal is discovered, the drill's worth will be proved many times over and even if the strata is proved barren, its benefit may be equally estimated in preventing the future fruitless expenditure of money and effort which might otherwise be turned in a direction more beneficial to the Province. Boring commenced on September 24th at a point 1½ miles north of New Glasgow, and about ½ mile west of the East River, and about 70 feet has been accomplished by the end of the month, the cores consisting of shales and sandstones.

D'ARCY WEATHERBE, C. E,

Mines Dept.

PROVINCIAL MUSEUM
AND SCIENCE LIBRARY.

PROVINCIAL MUSEUM,
HALIFAX, 23rd January, 1903.

TO E. GILPIN, JR., ESQ., L.L.D., &C.
Deputy Commissioner of Pub c Works and Mines:

SIR,—I respectfully present he n a report on the Provincial Museum of Nova Scotia and the P. incial Science Library, for the past year.

PROVINCIAL MUSEUM.

During the year 758 accessions w e catalogued, representing 2021 specimens. These, as before, almost tirely relate to the province.

Under your directions I went to Cape Breton during the past summer and spent some weeks in collecting in the country from Sydney to Louisbourg, and also at isolated points in Victoria, Inverness and Antigonish counties. As a result were obtained seven boxes (over 265 specimens) of miscellaneous minerals and rock samples from very many localities, illustrating the coal-measures and pre-carboniferous formations of those sections. In response to application then made to the Dominion Iron and Steel Company, we have received from Mr. Meissner, mineral engineer of the company, a full set of carefully selected samples of materials used in the manufacture of pig iron and steel, and the products and bye-products of the various works. Mr. Meissner has also since sent us a box of specimens of coals from various seams, iron ores, etc., and has very kindly promised to send us specimens in the future.

For the last Provincial Exhibition I was directed to prepare and exhibit a collection of Nova Scotian minerals. A collection of four cases, sixty square feet, was accordingly prepared representing cabinet specimens of the various ores and other minerals and clays, etc., found in the province, labelled with full particulars. The collection contained specimens from a number of newly developed properties as well as older ones and fairly represented all but some of the rarer minerals. A separate case of gold specimens was also exhibited by the department.

The determination and labelling of old material has been continued throughout the year as time permitted, with the result that some interesting specimens have been brought to light.

The collection of woods presented by Mr. Starr has been arranged in two upright glazed cases, and has been placed in the reading-room of the Science Library for want of space in the Museum.

The dry mollusca (shells) have been arranged systematically and labelled as far as possible, they having been unrevised since their removal to the present quarters.

Data relating to the collection of Antigonish County rocks made by the late curator, have been discovered in an old note-book and have been clearly transcribed and placed with the specimens, adding greatly to their scientific value.

All material in drawers has been roughly revised and general labels placed therewith, referring in many cases to literature in reference to it.

Dr. A. H. MacKay has kindly re-determined and arranged the collection of Nova Scotian fresh-water sponges presented by him a number of years ago and has added thereto half of the type-specimens of *Heteromeyenia macouni* from Sable Island, recently described by him.

Pasteboard mineral trays have been obtained and add much to the neatness of the mineral and other collections, particularly in the case of fragmental specimens.

The Weldon collection of rare delft-ware and porcelain referred to in the last report, has been deposited in the Museum by Mrs. Weldon's executors and has been arranged according to potteries, with descriptive labels. It illustrates the history and growth of the pottery industry.

A collection of Nova Scotian apples and pears has been put up by Prof. Sears of the School of Horticulture to replace the specimens previously exhibited, which had been over-ripe when prepared.

Systematically recorded observations on bird migration have been received and added to those of previous years. Those who assisted in this work were R. W. Tufts of Wolfville, L. E. Allen of Salem, Yar. Co., E. C. Allen of Arcadia, Yar. Co., J. W. McL. Bouteillier of Sable Island, and J. Crowell of Seal Island lighthouse. The observations of Messrs. Bouteillier and Crowell are of particular interest as shedding light on bird movements in rather unexplored but important outposts of the province.

Among various mineralogical and geological specimens received may be mentioned a large number from F. H. Mason, assayer of Halifax; minerals from New Ross from C. Keddy; fossils and rock specimens from R. Robson, assistant-manager of Sydney Mines (N. S

Steel and Coal Co.); a collection of rock specimens from Prof. Lee Russell, late of the Normal School; fossils, etc., from W. H. Prest; local geological specimens from T. V. Hill; minerals, etc., from A. G. Morrison, W. R. McDonald, Kenneth McIntosh, G. J. Mackintosh, J. D. Copeland, H. C. V. LeVatte, Arch. McDonald, and C. L. Mitchell, and an amethyst vein in granite near Halifax from J. Kline. Specimens from various boreholes throughout the province have been received from the Mine Department. R. F. Eagar has loaned a collection of one hundred Nova Scotian mineral specimens collected and named by the late Prof. Henry How.

Henry S. Poole has presented an exceedingly interesting specimen of supposed worm trails from sl t the syncline at Green Bank, Point Pleasant, Halifax. This ably one of the best evidences of fossils that have yet been fo the rocks of our gold-measures whose age is as yet only provisi ssigned to the Lower Cambrian.

The Robb Engineering Co. has n us a set of samples representing the various materials employed its business.

In the biological department me n may be made of the following accessions:—Tautog (*Tautoga on* a fish new to the province; Bonito (*Sarda sarda*), a fish in these waters, from J. Doherty; a Man-o'-war Bir *aquila*), new to the province; Ring-billed Gull (*L. delawaren* n F. C. Bell; nest and eggs of Ipswich Sparrow (*A. princeps*) from Sable Island, the only known breeding place of the species, from J. W. McL. Bouteillier; birds from R. W. Tufts; Moose skull with very remarkable abnormal antlers from Sheet Harbour; skulls and small mammals, etc., from F. Reid; several Blue Crabs (*Callinectes sapidus*), new to the province, taken at Cow Bay; an unusually large Lobster (18½ lbs.) from R. P. Barkhouse; and a Giant Swallowtail Butterfly (*Papilio cresphontes*), new to the province, from Miss Helen King.

The herbarium was increased by a large number of plants from Wyses Corner, N. S., and Labrador, from W. H. Prest, and 214 plants from Sable Island, representing very fully the flora of that island, from Mrs. Cotton Almon. The samples of grain in the stalk have been replaced by five new cases which have been neatly glazed, greatly improving their appearance and aiding in their preservation.

To Judge Charles R. Corning of Concord, N. H., we are indebted for an excellent bust portrait, framed, of Sir John Wentworth, Governor of Nova Scotia, from the painting by Tenney in the State House, Concord, copied in turn from the original by Copley at Portsmouth, N. H. Alfred E. Haliburton-Gilpin has donated a number of stone implements, coins, etc.

A set of the Canadian Geological survey maps has been bound and is accessible to visitors, and is much used by mining men and others.

A set of petrographical and mineralogical microscopic slides has been lent to Prof. E. Haycock, of Acadia College, for the purpose of special research, and some specimens of minerals have also been loaned the Mining School of Halifax. This is one of the ways in which our collections may prove of assistance in the work of that institution.

As this report is being prepared, several cases of minerals from the Paris and Glasgow exhibitions, have been received and will be opened and placed in the collection.

A list of donors is appended.

DONORS.

Allen (E. C.), Arcadia; Allen (L. E.), Salem; Almon (A.), Sydney; Almon (Mrs. Cotton); Annand (Frederick W.); Archibald (Charles); Archibald (Sheriff D.); Arvine (Dr.), Can. Oil & Coal Co., East Bay.

Barkhouse (Robert P.), Chester; Beazley & Henrion; Bell (Frank C.); Bishop (Watson L.), Dartmouth; Blackwell (H.); Boak (Hon. Sir Robert); Boutcillier (James W. McL.), Sable Island; Boutilier (Arthur); Brown (H. G.), Sydney: Brown (R. II.)

Carlyle (Fred), Waverley: Carrol (J.); Challoner (Capt. J. L), Mira; Clarke (Jas.), Sydney; Copeland, (J. D.), Antigonish; Corning (Judge Charles R.), Concord, N. H.; Crowdis, (G. H.), Louisbourg; Crowell (John), Seal Island Lighthouse, Yar. Co.

Dennehy (John F.); Doherty (Joseph), Prospect; Dominion Coal Co, Glace Bay: Dominion Iron & Steel Co., Sydney; Draper (Rev. T. F.), Louisbourg; Dusten (W. M.), Pictou.

Eastern National Copper Co., C. B. (per J. W. Regan); Eaton (Ralph S.), Kentville.

Faribault (E. R.), Ottawa; Farrell (Vincent F.); Findlay (Wm. H.); Finlayson (D., M. P. P.), Arichat; Fuller (F. L.), Truro.

Geological Survey of Canada, Ottawa; Gilpin (Alfred E. Haliburton); Gilpin (Dr. E., Jr.); Goudge (Walter M.)

Hampson (John E.); Harrington (Arthur E.); Hicks (John H.) Bridgetown; Hill (T. Vardy).

Keddy (Charles), New Ross; Kelly & Dodge, Sydney; King (Miss M. Helen); King (Wm. C.), Wellington; Kline (John).

Lantz (P. B.), New Ross; LeVatte (H. C. V.), Louisbourg; Lindsay (Dr. A. W. H.); Lucas (F. E.), Sydney.

McDonald (Archibald), Whycocomah; McDonald (A.), manager Caledonia Colliery, Glace Bay; McDonald, (W. B.); McDougall (H. F.), Christmas Island, C. B.; McFadyen (M.), Mabou Harbour, Inv. Co.; Mackintosh (Geo. J.); McIntosh (Kenneth), St. George's Channel; MacKay (Dr. A. H.); MacKenzie (Jas. W.); MacKie (C. J.); Macpherson (Jos.), North Sydney; McQuarrie (A. P.); Mason (F. H.); Mason (T. J.); Maxwell (Jas.), Westville; Meissner (C. A.), Sydney; Mills (C. H.), Chester Basin; Mills (Capt. J. W.), MacKenzie River, N. W. T.; Mines Department of N. S.; Mira Brick Co., Sydney; Mitchell (C. L.), Louisbourg; Morrison (A. G.); Moseley (E. W.), Sydney; Murphy (Dr. Martin).

New Glasgow Foundry, New Glasgow; Nichols (Arthur L.), Berwick; N. S. School of Horticulture (per Prof. F. C. Sears), Wolfville; N. S. Steel and Coal Co., (per R. Robson), Sydney Mines.

Payson (W. W.), Deep Brook; Perrin (J.) McNab's Island; Petrie (L. A.), Glace Bay; Phillips (Joseph L.), Mira Gut; Poole (Henry S.); Port Hood Coal Co.; Prest (Walter H.), Bedford; Provincial Farm (per F. L. Fuller), Truro.

Quigley (Wm. S.)

Reid (Frank H.), Middleton; Robb Engineering Co., Ltd., Amherst; Robson (Robert), Sydney Mines; Ross (Howard), Sydney; Routledge (T.), Sydney; Russell (Prof. Lee), Truro.

Sears (Prof. F. C.), Wolfville; Silver (Arthur P.); Stayner (Charles); Stewart (F. I.), Sydney; Strachan (John), President, Battye Brick & Freestone Mfg. Co.; Sutcliffe (Mr. & Mrs. Edw. B.)

Townsend (J. H.), Tangier; Tufts (Harold F.), Wolfville; Tufts (Robie W.), Wolfville.

Vanbuskirk (A. C.)

Waverley Gold Mining Co., Waverley; Weatherbe (D.); Weldon (executors of Mrs.); Whitman (E. C.), Canso; Whitten (R. B.), Sydney.

PROVINCIAL SCIENCE LIBRARY.

During the past year an extensive but most necessary work has been accomplished in the preparation of new accession-books for the society publications in the Library, embracing the exchanges of the Institute of Science. As referred to in my last report, the old accession-books of the Institute, through rapid growth of the Library, had become inadequate and much involved. Furthermore, in order to know just what publications of a certain society or institution were in the Library, cards and accession-books had both to be consulted. The whole has now been combined and condensed into one set of three folio accession-books, giving ample room for incoming publications, alphabetically arranged according to location of society or institution. This arrangement seems to be the only one possible in a special library such as this that embraces the yearly publications of several hundreds of miscellaneous societies in all parts of the world, making special methods necessary that are not required in ordinary libraries.

The preparation of these record books has made appeal to the shelves and cataloging *de novo* necessary in many cases. We are already, however, reaping the benefit of the systematically arranged books, in the ease with which accessions are now dealt with in comparison with the difficulty experienced and time consumed in the past. These accession-books were prepared by Mrs. Piers.

The manuals and other works of a non-periodical nature, consisting of those received from the Legislative Library, and by purchase and otherwise since then, I hope to have catalogued in the ordinary way on cards during the present year, and also to make some advantageous re-arrangement.

During the past year about five hundred dollars' worth of new manuals and other comprehensive treatises have been added, embracing some ot the most modern and highly recommended works on such subjects as mining, prospecting, metallurgy, assaying, applied chemistry, explosives, mine-surveying, geology, mineralogy, lithology, agriculture, horticulture, botany, zoology, meteorology, water-examination, etc. Much remains yet to be done in strengthening those departments, but the "manual" part of the Library is now beginning to have a modern facies.

The Library is being more largely patronized, and is frequented by students as well as men engaged in industries to which its works apply.

Besides the large number of exchanges received through the Institute of Science, accessions have also been added through the Mining Society of Nova Scotia and by further transfers from the Legislative Library, the Department of Mines, Dr. Gilpin, and Dr. A. P. Reid.

Some fifty-seven volumes have been placed in the binder's hands and will soon be again on the shelves. Very much, however, yet remains to be done in this respect, the binding of periodicals being greatly in arrears. Binding seems to be one of the first duties of a library such as this, as it is next to impossible otherwise to keep in good condition and ready for consultation the large number of very valuable periodicals issued in part form. I feel it would also be advisable to cheaply lace in stock covers the foreign periodicals. This could be done from year to year at an exceedingly small outlay and would, I believe, be quite satisfactory.

During the winter of 1901–02 fortnightly meetings of the Botanical Club of Halifax were held in the reading-room for work in microscopical plant investigation, and the Mining Society has also met there.

I have the honor to be, Sir,

Your most obedient servant,

HARRY PIERS,

Curator and Librarian.

I remain, Sir,

Your obedient servant,

E. GILPIN, JR.,

Deputy Commissioner of Public Works and Mines and Inspector of Mines.

TABLES.

LIST OF MINERAL LEASES (OTHER THAN GOLD.)

IRON.

No. of Lease.	Name of Owner.	County.	Agent or Owner.	Address.
289	Est. Greener, J. et al	Cape Breton		
232	Brookman, P	"		
292	Smith, W	"		
104	McKenzie, J. W	"		
258, 259, 260, 261	McPherson, M A	"		
238	Matheson, A	"		
43, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 87, $\frac{33}{44}$	Bartlett, J. H	Pictou		
68, 71, 83	Nova Scotia Steel & Coal Co.	"		
61	Cameron, J. A	"		
82	McMillan, J. R.	"		
10	Fraser, W. J.	Inverness		
122	Wilson, J. W. et al	"		
57	Cape Breton Iron Co.	"		
89	McKenzie, J. A.	"		
99	Fraser, W. A	"		
7	McDonald, L	Antigonish		
8, 9, 10, 11	Cowlan, G. B	"		
16	Working Mens P. D. & M. Co.	"		

9/22, 10/23, 11/24, 12/26, 13/30	Styles Mining Co	"		
23/53	Strathcona Coal Co	"		
57	Salt Springs Coal Co	"		
26/16	Minudie M. & T. C	"		
60, 61	Tupper, C. H	"		
94, 65	Faulkner, G. E	"		
80	Gue, T. R	"		
86	Rutherford, J	"		
91	Fraser, H. R	"		
131	Hickman, J. S	"		
34	Weatherbe, U. J	"		
125	Francklyn, Geo. E	"		
14	Joggins C. M. Association	"		
24/47, 25/9	Boston Coal Mg. Co	"		
94	Ripley, E	"		
42/52	Moore, R G. M	"		
13/79, 1/27, 2, 3, 28, 29, 30	Nova Scotia Steel & Coal Co	Cape Breton		
173, 58/67	Weatherbe, R. L	"		
111, 164	Sydney Coal Co	"		
45/5, 46/28, 47/29, 50/40, 51/41, 52/42, 60/54, 61/55, 62/56, 63/57, 64/58, 65/59, 66/60, 67/61, 68/62, 69/63, 108, 109, 110, 188, 207, 140, 252, 253, 254, 255, 256, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 278, 279	Dominion Coal Co	Cape Breton	H. Donkin	Glace Bay
290	McDonald, D. A	"		
283	Emmett, J. H	"		
117, 246	Hamilton, A. G	"		
2	LeCras, Henry	"		

LIST OF MINERAL LEASES (OTHER THAN GOLD.)—*(Continued.)*

COAL.

NAME OF LEASE.	NAME OF OWNER.	COUNTY.	AGENT OR OWNER.	ADDRESS.
	COAL.			
83, 84, 85	Barton, A. McG.	Pictou		
3/1, $\frac{1}{23}$, $\frac{2}{42}$, 3, 4, 69	Acadia Coal Co.	"		
5/12$\frac{6}{13}$, $\frac{7}{14}$, 66	Intercolonial Co.	"		
46, 8/6, 68, 70	Nova Scotia Steel & Coal Co.	"		
10/24	Richey, M. H.	"		
11/11, 45, 9/10	Gray, B. G.	"		
56, 22/51, 74, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104	Canada Coals & R'y. Co.	Cumberland		
19/44, 55, $\frac{16}{6}$, $\frac{17}{7}$, $\frac{18}{18}$, $\frac{20}{52}$, $\frac{21}{55}$, 61, 62, 70, 71, 72, 73, 75, 76, 77, 78 79, 81, 82, 83, 84, 85, 87, 88, 90, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 141, 118, 119, 120, 121, 122, 123, 124, 89, 93, 60, 66, 67, 68, 69, 125a, 126, 128, 129, 135, 137, 138	Cumberland Rail'y. Coal Co.	"	J. R. Cowans.	Springhill
8/5	Lawson Coal Rail'y. Co.	"		
134	Givan, E. W. et al	"		
6/12	Robertson, Hugh	"		
15	Prospect Mining Co.	"		

9/22, 10/23, 11/24, 12/25, 13/30	Styles Mining Co.	"		
23/53	Strathcona Coal Co.	"		
57	Salt Springs Coal Co.	"		
26/16	Minudie M. & T. C.	"		
60, 61	Tupper, C. H.	"		
94, 65	Faulkner, G. E.	"		
80	Gue, T. R.	"		
86	Rutherford, J.	"		
91	Fraser, H. R.	"		
131	Hickman, J. S.	"		
34	Weatherbe, U. J.	"		
125	Francklyn, Geo. E.	"		
14	Joggins C. M. Association	"		
24/47, 25/9	Boston Coal Mg. Co.	"		
94	Ripley, E.	"		
4/5 2/2	Moore, R G. M.	"		
13/79, 1/27, 2, 3, 28, 29, 30	Nova Scotia Steel & Coal Co.	Cape Breton.		
173, 58/67	Weatherbe, R. L.	"		
111, 164	Sydney Coal Co.	"		
45/5, 46/28, 47/29, 50/40, 51/41, 52/42, 60/54, 61/55, 62/56, 63/57, 64/58, 65/59, 66/60, 67/61, 68/62, 69/63, 108, 109, 110, 188, 207, 140, 252, 253, 254, 255, 256, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 278, 279	Dominion Coal Co.	Cape Breton.	H. Donkin.	Glace Bay
290	McDonald, D. A.	"		
283	Emmett, J. H.	"		
117, 246	Hamilton, A. G.	"		
142	LeCras, Henry	"		

LIST OF MINERAL LEASES (OTHER THAN GOLD.)—*(Continued.)*

COAL.—*(Continued.)*

No. of Lease.	Name of Owner	County.	Agent or Owner.	Address.
220, 214	Cayley, H. St. Q	Cape Breton.		
179, 180, 168, 190, 208, 223, 241, 284.	Roberts, F.	"		
130	Mitchell, A. B.	"		
212, 131, 128, 128, 134, 135, 136, 139, 144, 182, 200, 219	Moseley, E. T	"		
138, 149, 184, 224	White, A. J.	"		
141, 177, 244, 213, 112, 113, 114, 115, 116	Cumberland Ry. & Coal Co.	"		
235, 146, 193, 194, 216	Gowie & Block House Collieries.	"		
166	Dunn, J.	"		
242	Can. Oil & Coal Co.	"		
247	McNeil, H. F	"		
161	Routledge, T.	"		
282	Moseley, E. W	"		
169, 170, 183	McVey, Jas	"		
178	Routledge, E.	"		
165	Stephens, L. H,	"		
163, 185	Hamilton, C. F.	"		
199	Copeland, J. D.	"		
291	McCuish, D. A. et al	"		
243, 171, 174	Gorham, J. W	"		

211, 233, 236	Burchell, J. E.	"		
5	McKinnon, D. L.	"		
	Ross, H.	"		
187, 202, 205, 206, 209	Kennelly, D. J.	"		
	Harold, T. C.	"		
237, 222	Routledge, T.	"		
221	Hickey, C.	"		
1	McKenzie, J. A.	"		
175	McDonald, J. W.	"		
225	Cossitt, G. G.	"		
167	Murray, J.	"		
191, 197	McVicar, J.	"		
229	Matheson, D.	"		
218	Morrison, D.	"		
217	Townshend, James	"		
248	McMillian, J.	"		
275, 276	Petrie, L. A.	"		
258, 259, 260, 261	McPherson, M. A.	"		
1/13, 6/4, 7/10, 26, 29, 30, 111, 112, 113	Port Hood Coal Co.	"		
251	Caldwell, T.	"		
226	Stephen, A.	"		
231	Owen, J. M.	"		
7	Dominion Coal Co.	Victoria		
1/2	Burchell Bros.	"	J. T. Burchell	N. Campbellton
8, 9	Fraser, J. W.	Inverness		
11	Dawson, G.	"		
13, 14, 15, 18, 19, 20, 23, 24, 25, 28, 40, 41, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 60, 61, 100, 101, 104, 105	Inverness and Richmond Coll. and Rail'y. Co., Ltd.	"		

LIST OF MINEARL LEASES (OTHER THAN GOLD.)—*(Continued.)*

COAL.—*(Continued.)*

No. of Lease.	Name of Owner.	County.	Agent or Owner.	Address.
3/11, 27	McKenzie & Mann	Inverness		
29, 30	Tremaine, E. D	"		
35, 38, 39	Ross, W.	"		
43, 44	Farquhar, J. A	"		
31	Sutherland, W. A	"		
32, 33, 34, 42	Wallace, T. A.	"		
63, 64, 65, 96, 97, 98	Taylor, Ira	"		
66, 108, 109	Lithgow, J. R.	"		
67, 68	McDonald, W. B	"		
69	McInnes, H.	"		
70, 71, 72, 77, 78, 79, 80	Roche, Wm.	"		
73, 74, 75, 76	Townshend, S.	"		
81, 110	Caldwell, T.	"		
82, 85, 88	Andrews, J. W.	"		
84, 83, 86, 87, 89, 90, 91, 92' 93, 94, 95	Sherman, C. E.	"		
106, 107, 114, 115, 116, 117, 118, 119, 120, 121	Mabou Coal Mg. Co.	"		
123	McCoil, A.	"		
34	Ross, Wm. et al	Richmond		
33	Hunt, J. J.	"		
1, 7, 8	Terminal City Co	"		

	Reynolds, W. K.	"		
5	Chisholm, W	"		
9	Lennoxville T. & C. Co.	"		
37, 11	Eastern Dev. Co	"		
13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33	H. Pearl	"		
285	Dom. Coal Co.	"		
6	Est. T. K Jenkins	Colchester		
15	Corbett, J. E. et al.	Antigonish		

COAL—SALES.

NAMES.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	Year 1902.	Year 1901
NOVA SCOTIA :						
Land Sales...	291,466	108,244	94,811	86,095	580,616	485.140
Sea Borne...	59,701	204,865	247,166	290,215	801,947	513,674
Total N. S...	351,167	313,109	341,977	376,310	1,382,563	998,814
New Brunswick.	86,799	76,829	75,557	80,153	319,338	349,994
Newfoundland .	33,349	16,707	23,700	31,531	105,287	105,620
P. E. Island....	17,438	1,310	13,447	24,008	56,203	53,773
Quebec........	190,666	68,936	408,627	575,751	1,243,980	1,017,046
West Indies....	......	3,006	2 976	....	5,982	....
United States..	155,131	218,673	168,323	209,255	751,382	590,086
Other Countries.	13,880	14,230	5,781	....	33,891	4,002
Total......	848,430	712,800	1,040,388	1,297,008	3.898.626	3,119,353

COAL—GENERAL STATEMENT.

1902.	Produce.	Sales.	Colliery Consumption.	Workmen.
1st Quarter.........	960,639	848,430	62,283	18,644
2nd "	965,271	712,800	66,905	20,346
3rd "	1,133,363	1,040,388	70,036	13,294
4th "	1,307,596	1,297,008	79,790	9,351
Total........	4,366,869	3,898,626	279,014	61,635

TABLE A.—COAL TRADE BY COUNTIES FOR THE YEAR ENDED SEPTEMBER 30TH, 1902.

	CUMBERLAND.		PICTOU.		CAPE BRETON.		OTHER COUNTIES.		TOTAL.	
	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.
1st Quarter.......	135659	106126	119792	100955	701417	638378	3771	2971	960639	848430
2nd "	134815	99194	112812	92395	699748	506734	17896	14477	965271	712800
3rd "	128138	112622	126799	115423	848383	791829	30043	20514	1133363	1040388
4th "	146305	134899	156200	146610	968011	988026	33080	27473	1303596	1297008
Total........	544917	452841	515603	455383	3217559	2924967	84790	65435	4362869	3898626

TABLE B.—COAL TRADE BY COUNTIES.

	CUMBERLAND.	PICTOU.	CAPE BRETON.	OTHER COUNTIES.	TOTAL.
NOVA SCOTIA:					
By Land	107469	228146	231857	13144	580616
By Sea	....	21920	750851	29176	801947
Total	107469	250066	982708	42320	1382563
New Brunswick	211647	30631	71544	5516	319338
Newfoundland	....	102	102689	2496	105287
P. E. Island	....	27470	23262	5471	56203
Quebec	59233	125185	1049930	9632	1243980
West Indies	....	....	5982	....	5982
United States	74492	21929	654961	....	751382
Other Counties	....	....	33891	....	33891
Total	452841	455383	2924967	65435	3898626

COAL PRODUCE OF NOVA SCOTIA FOR YEAR ENDED SEPTEMBER 30TH, 1902.

COLLIERY.	Produce.	Sales.	Colliery Consumption.	
			Engines.	Workmen.
Chignecto	2243	690	1434	255
Joggins	58027	46968	9341	2026
Jubilee	1378	1163	115	....
Springhill	480676	401777	31266	8875
Scotia	493	423	....	....
Strathcona	2100	1820	225	48
Acadia	286582	245278	35318	5789
Intercolonial	206599	189183	15553	3871
N. S. Steel & Coal Co	22422	20922	1300	....
Dominion	2952578	2715866	120064	28429
N. S. S. & C. Co.	241891	186539	50093	8525
Gowrie & B. House	19597	14880	3536	1120
Sydney Coal Co.	7493	7682	72	139
New Campbellton	11939	9352	1775	1328
Port Hood	34517	33056	3002	822
Broad Cove	38334	23027	5920	408
	4366869	3898626	279014	61635

STATEMENT OF LABOUR EMPLOYED DURING THE YEAR ENDED SEPTEMBER 30TH, 1902

COLLIERY.	UNDERGROUND.				ABOVE GROUND.				CONSTRUCTION.				TOTAL.		HORSES.		PITS WORKING.
	Skilled Labor.	Laborers.	Boys.	Days' Labor.	Skilled Labor.	Laborers.	Boys.	Days' Labor.	Skilled Labor.	Laborers.	Boys.	Days' Labor.	Persons.	Days' Labor.	Surface.	Below.	Days.
Chignecto	3	1	....	1088	1	....	....	930	11	19	....	8755	38	10773	3		300
Joggins	81	84	10	46272	7	74	11	21879	..	..	..		267	71141	5	8	250
Jubilee	14	1	1	1019	2	4	1	651	10	..	..	518	33	3283	1		84
Springhill	532	454	125	264764	125	253	48	100775	.	...	.		1537	365339	34	17	243
Acadia	270	265	69	147733	42	100	90	63154	.	...	..		836	210887	15	38	301
Intercolonial	230	158	87	113021	47	102	22	40511	8	5	1	1804	660	161430	19	91	273
N. S. S, & Coal Co.	29	28	3	12467	11	14	1	6633	5	4	...	9918	95	21314	1		275
Dominion C. Co	1152	1322	210	800033	273	336	52	100493	108	....		6615	3464	1006071	59	353	305
G. & B. H. Collieries	38	14	3	14410	14	10	9	6808	.	..	..		81	21218	1	3	302
N. S. S. & Coal Co.	394	85	92	150619	90	152	39	77085	38	95	...	10735	1008	247400	8	44	278
Sydney C. Co	17	8	.....	4710	2	5	.....	1573	...	....	..	..	32	6283	1		244
C. B. Coal Co	13	11	2	6345	4	3	3	2491	....	..	..		36	9100			240
Port Hood C. Co.	13	9	2	21504	11	42	.....	15408	9	18	....	4959	69	41101	5	8	170
	2786	2440	619	1584585	629	1155	301	649043	179	50	1	40807	8009	2174805	153	562	

EXPENDITURE COAL MINES NOVA SCOTIA FOR YEAR ENDED SEPTEMBER 30TH, 1902.

	Shafts.	Slopes.	Levels.	Machinery.	Colliery Buildings.	Dwellings.	Wharves.	Prospecting.	Railways.	Total.
Chignecto	....	6123	13029	10824	2371	1565	....	221	9721	43854
Jubilee	....	....	366	28	288	41	....	199	51	973
Springhill	....	....	....	29200	7400	....	....	....	....	36600
Strathcona	....	5354	723	3591	1826	1800	....	750	1260	15304
Acadia	....	22397	....	13705	3577	996	....	....	....	40675
Intercolonial.........	2262	....	....	2962	6828	....	....	....	1858	11648
Marsh	....	8468	....	4524	1827	2541	....	....	890	18250
Gowrie & B. House.	5394	....	4040	250	820	....	860	....	....	5970
Sydney	....	1353	....	2156	2674	6434	....	1025	1413	15055
New Campbellton...	....	527	668	....	288	....	....	....	....	1483
Port Hood............	....	2900	345	....	....	....	5623	....	....	8868
	....	47122	19171	67240	27899	13377	6483	2195	15193	198680

STATEMENT OF LABOUR EMPLOYED DURING THE YEAR ENDED SEPTEMBER 30TH, 1902.

COLLIERY.	UNDERGROUND.				ABOVE GROUND.				CONSTRUCTION.				TOTAL.		HORSES.		PITS WORKED.
	Skilled Labor.	Laborers.	Boys.	Days' Labor.	Skilled Laboa.	Laborers.	Boys.	Days' Labor.	Skilled Labor.	Laborers.	Boys.	Days' Labor.	Persons.	Days' Labor.	Above.	Below.	Days.
Chignecto	3	1	....	1088	1	.....	......	229	11	12	....	8755	28	10072	2	......	200
Joggins	81	84	19	46272	7	74	11	24872	.....	.....	...	.....	276	71144	5	9	250
Jubilee	14	1	1	1619	2	4	1	651	10	....	....	513	33	2783	1	.....	84
Springhill	532	454	125	264764	125	253	48	100775	......	....	....	.....	1537	365539	24	47	242
Acadia	270	265	69	147733	42	160	29	63154	......	....	....	......	835	210887	15	28	261
Intercolonial	230	158	87	113021	47	102	22	46511	3	5	1	1894	655	161426	12	21	273
N. S. S, & Coal Co.	29	28	3	12467	11	14	1	6633	5	4	....	2213	95	21313	1	....	275
Dominion C. Co	1152	1322	216	800033	273	336	52	196423	103	....	....	9515	3454	1005971	52	353	295
G. & B. H. Collieries	38	14	3	14410	14	10	2	6808	......	....	....	......	81	21218	1	3	262
N. S. S. & Coal Co.	394	85	92	150619	90	152	32	77085	38	25	....	19725	908	247429	8	44	278
Sydney C. Co	17	8	....	4710	2	5	.....	1573	....	....	....	....	32	6283	1	......	244
C. B. Coal Co	13	11	2	6345	4	3	3	2821	.....	....	....	.....	36	9166	.....	.....	249
Port Hood C. Co	13	9	2	21504	11	42	......	15408	2	13	....	4252	92	41164	5	3	176
	2786	2440	619	1584585	629	1155	201	542943	172	59	1	46867	8062	2174395	128	508	....

EXPENDITURE COAL MINES NOVA SCOTIA FOR YEAR ENDED SEPTEMBER 30TH, 1902.

	Shafts.	Slopes.	Levels.	Machinery.	Colliery Buildings.	Dwellings.	Wharves.	Pros-pecting.	Railways.	Total.
Chignecto	....	6123	13029	10824	2371	1565	....	221	9721	43854
Jubilee	....	....	366	28	288	41	....	199	51	973
Springhill	....	....	....	29200	7400	....	....	....	....	36600
Strathcona	....	5354	723	3591	1826	1800	....	750	1260	15304
Acadia	....	22397	....	13705	3577	996	....	....	....	40675
Intercolonial	2262	....	....	2962	6828	....	....	....	1858	11648
Marsh	....	8468	....	4524	1827	2541	....	....	890	18250
Gowrie & B. House.	5394	....	4040	250	820	....	860	....	....	5970
Sydney	....	1353	....	2156	2674	6434	....	1025	1413	15055
New Campbellton	....	527	668	....	288	....	....	....	....	1483
Port Hood	....	2900	345	....	....	....	5623	....	....	8868
	....	47122	19171	67240	27899	13377	6483	2195	15193	198680

PRODUCTION OF GOLD FROM 1862 TO 1902.

District.	Tons Crushed.	Total Yield of Gold.			Average Yield of Gold per ton.			Value at $19.00 per oz.
		Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	$
u and Moose River	142539	46594	12	21	....	6	13	$ 885298
tague	27167	41309	10	18	1	10	10	784882
am	49943	53513	12	16	1	1	10	1016759
frew	50326	43053	... .	7	....	17	3	818007
erbrooke	259599	145616	12	6	....	11	5	2766714
stormont	244815	78886	14	21	....	6	11	1498848
Tangier	48122	23295	4	15	....	9	16	442609
Uniacke	59194	41469	15	1	....	14	....	787926
Waverley	147725	68124	11	9	....	9	5	1294367
Brookfield	59420	27404	12	23	....	9	5	520688
Salmon River	117906	41497	5	20	....	7	1	788448
Whiteburn	6583	9625	12	18	1	9	6	182887
Lake Catcha	25894	25700	13	13	1	19	21	488313
Rawdon	12189	9606	5	10	....	15	18	182519
Wine Harbour	58773	30015	14	14	....	10	5	570299
Fifteen Mile Stream	34876	16726	10	5	....	9	14	317804
Malaga	20846	19282	1	7	....	18	12	366359
Other Districts	95746	57951	18	4	....	12	3	1101087
	1461672	779674	9	12	....	10	16	14813814

GENERAL GOLD STATEMENT YEAR ENDING SEPTEMBER 30TH, 1902.

DISTRICT.	TONS CRUSHED.	TOTAL YIELD OF GOLD.			AVERAGE YIELD OF GOLD PER TON.		
		Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.
Stormont	35906	6290	1	18	....	3	13
Sherbrooke	15412	3720	9	....	....	4	20
Renfrew	974	1374	11	1	1	8	5
Wine Harbour	4187	1186	3	....	....	5	16
Leipsigate	2390	1135	2	14	....	9	7
Harrigan Cove	3445	1564	3	3	....	8	26
North Brookfield	7736	3051	5	1	....	7	21
Waverley	11789	3049	14	....	....	4	20
Caribou	9890	2162	....	21	....	4	9
Oldham	719	565	10	....	....	15	18
Uniacke	3896	1992	19	23	....	10	6
Lake Catcha	1037	554	8	11	....	10	17
Kemptville	515	389	17	....	....	15	3
Other Districts	4180	1243	....	17	....	5	23
Total	192076	28279	5	13	....	5	13

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.

MONTH.	Stormont.					Sherbrooke.				
	No. of Mines.	Tons Crushed.	Yield of Gold.			No. of Mines.	Tons Crushed.	Yield of Gold.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October	4	2371	549	6	15	2	1445	210	6	......
November	3	2604	522	17	9	2	1870	212	4	......
December	3	2632	569	5	......	2	1452	105	13	......
January	4	2969	602	2	......	2	808	167	1	......
February	3	2452	507	5	15	2	1046	201	10	......
March	4	3519	621	14	......	2	802	261	7	......
April	3	3400	469	18	......	2	1052	278	10	......
May	4	3860	612	1	......	2	1310	386	10	......
June	3	3254	431	2	......	2	1436	436	5	......
July	5	3383	495	1	3	2	1284	485	......	......
August	2	2060	297	......	......	2	1488	503	......	......
September	4	3402	612	9	......	2	1419	473	3	......
Total	....	35906	6290	1	18	....	15412	3720	9	......

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	Renfrew.					Wine Harbour.				
	No. of Mines	Tons Crushsd.	Yield of Gold.			No. of Mines.	Tons Crushed.	Yield of Gold.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October	1	60	61	18	....	1	275	93	....	....
November	1	54	54	10	....	1	300	113	....	....
December	1	55	56	....	....	1	290	102	....	....
January	1	88	91	....	....	1	290	102	....	....
February	1	55	42	....	....	2	380	105	10	....
March	1	40	32	15	....	3	395	130	10	....
April	1	40	35	....	....	3	431	134	4	....
May	1	50	43	....	....	2	400	111	4	....
June	1	36	50	....	....	1	278	62	15	....
July	1	55	147	10	....	3	365	82	19	....
August	2	381	360	18	1	2	370	91	10	....
September	1	60	400	....	....	3	413	57	10	....
Total	.....	974	1374	11	1	.....	4187	1186	2	......

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	Leipsigate.					Harrigan Cove.				
	No. of Mines.	Tons Crushed.	Yield of Gold.			No. of Mines.	Tons Crushed.	Yield of Gold.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October	1	196	77	9	....	3	337	120	1	....
November	1	200	70	5	....	3	506	186	3	9
December	1	155	86	8	....	3	409	197	7	....
January	1	209	120	18	....	2	391	181	5	....
February	1	217	107	....	....	2	300	114	....	....
March	1	200	85	15	....	2	258	101	10	....
April	1	252	111	....	....	3	377	113	15	....
May	1	266	98	9	....	2	300	97	9	....
June	1	185	89	15	....	3	309	83	12	18
July	3	285	135	3	14	1	103	19	....	....
August	2	60	32	....	....	1	52	220	....	....
September	3	165	121	....	....	1	103	130	....	....
Total		2390	1135	2	14	......	3445	1564	3	3

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	NORTH BROOKFIELD.					WAVERLEY.				
	No. of Mines.	Tons Crushed.	Yield of Gold.			No. of Mines.	Tons Crushed.	Yield of Gold.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October	1	670	217	6	....	1	1781	317	16	....
November	1	654	258	10	....	1	1901	398	2	....
December	1	623	277	....	....	1	1549	232	1	....
January	1	644	253	....	....	1	1653	318	....	....
February	1	676	131	19	1	1	1043	173	....	....
March	1	765	175	....	....	1	1168	390	15	....
April	1	832	148	10	....	1	926	330	....	....
May	1	594	300	....	....	1	286	272	....	....
June	1	712	482	....	....	1	692	291	....	....
July	1	567	334	....	....	1	730	268	15	....
August	1	183	149	....	....	1	60	58	5	....
September	1	816	325	....	....			No crushing done.		
Total	......	7736	3051	5	1	......	11789	3049	14	......

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	Caribou.					Oldham.				
	No of Mines.	Tons Crushed.	Yield of Gold.			No. of Mines.	Tons Crushed.	Yield of Gold.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October	4	835	247	10	12	1	58	35	8	6
November	4	1002	198	9	1	1	56	17	18	....
December	3	726	126	7	18	1	80	82	5	12
January	3	848	125	13	12			No crushing.		
February	3	536	298	14	12					
March	3	1626	299	1	12	1	98	125	10	....
April	2	1084	198	17	....	1	127	58	9	....
May	3	1070	197	10	14	1	57	35	15	....
June	3	479	113	8	12	1	110	111	5	12
July	3	548	75	2	12			No crushing.		
August	3	548	132	9	....	1	133	93	7	....
September	2	588	148	16	12		Mortared	5	11	18
Total	......	9890	2162	....	21	......	719	465	10	....

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	UNIACKE.					LAKE CATCHA.				
	No. of Mines.	Tons Crushed.	YIELD OF GOLD.			No. of Mines.	Tons Crushed.	YIELD OF GOLD.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October	1	138	56	15	....	2	102	52	2	....
November	3	450	135	18	....	2	136	83	19	12
December	2	455	46	4	....	2	118	46	5	....
January	3	441	149	16	....	2	134	60	....	5
February	3	281	132	17	....	1	10	17	3	3
March	2	366	569	14	....	2	67	13	14	6
April	2	321	267	7	....	1	20	22	5	....
May	2	122	308	9	11	1	52	39	15	13
June	2	252	19	15	....	2	99	46	4	13
July	1	400	23	17	....	2	103	51	....	17
August	1	267	31	16	....	2	106	59	15	....
September	2	403	250	11	12	1	90	62	3	14
Total	......	3896	1992	19	23	......	1037	554	8	11

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	KEMPTVILLE.					OTHER DISTRICTS.				
	No. of Mines.	Tons Crushed.	YIELD OF GOLD.			No. of Mines.	Tons Crushed.	YIELD OF GOLD.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October			....	....	....	4	105	111	8	....
November	1	160	98	15	....	4	179	112	13	....
December	1	20	8	....	....	7	217	100	14	4
January			....	....	....	5	220	93	....	11
February			....	....	....	8	236	123	10	15
March			....	....	....	5	97	46	5	16
April	1	50	36	18	....	2	92	45	....	21
May	1	90	50	6	....	2	79	86	9	....
June	1	40	33	10	....	4	751	179	....	15
July	1	20	29	....	....	4	671	128	6	8
August	1	35	45	17	....	4	394	96	....	20
September	1	100	87	11	....	6	1139	120	11	8
Total		515	389	17	....		4180	1243	....	17

CUSTOMS CANADIAN.

PORT OF WINDSOR, N. S., 1902.

Memo. of Gypsun and Moulding Sand exported from the Port of Windsor, N. S., and Outports for the Year ending 30th Sept., 1902.

	TONS.	VALUE.
Gypsum	168,717	$159,296 00
Moulding Sand	390	1,560 00
Total	169,107	$160,856 00

WILLIAM O'BRIEN,
Collector.

INTERCOLONIAL RAILWAY.

Statement showing the number of Tons of Coal received at the following stations from Mines in Nova Scotia, during the year ended 30th September, 1902.

DESTINATION.	TONS.	DESTINATION.	TONS.
Halifax	46886	*Brought forward*	335837
Dartmouth	27115	Tracadie	25
Waverly	293	Harbour au Bouche	32
Bedford	706	Mulgrave	369
Windsor Junction	14877	Point Tupper	314
Wellington	21	Hawkesbury	99
Enfield	143	River Denys	36
Elmsdale	453	Orangedale	35
Milford	12	McKinnon's Harbour	7
Shubenacadie	189	Iona	128
Stewiacke	403	Grand Narrows	190
Brookfield	891	Christmas Island	39
Truro	13463	Boisdale	588
Valley	6	Barrachois	38
West River	23	Georges River	32
Glengarry	18	Scotch Lake	38
Hopewell	1310	North Sydney Junc.	22
Ferrona Junction	62133	North Sydney	99
Stellarton	8142	Belmont	6
Sylvester's	19	Debert	6
New Glasgow	7920	East Mines	6
Trenton	63929	Londonderry	1665
Pictou Landing	83528	Wentworth	7
West Merigomish	6	Westchester	6
Merigomish	58	Thomson	7
Avondale	50	Oxford Junction	7
Antigonish	3195	Oxford	906
South River	12	Pugwash Junction	270
Heatherton	18	Pugwash	1300
Bayfield Road	18	Wallace	286
rward..	335837	*Carried forward*	342400

REPORT

OF THE

TMENT OF MINES,

OVA SCOTIA,

ending 30th September, 1903.

HALIFAX, N. S.
UBLIC WORKS AND MINES, KING'S PRINTER,
1904.

LEN & CO., PRINTERS, HALIFAX, N. S.

INTERCOLONIAL RAILWAY.

Statement showing the various kinds of Coal (in Tons) received from the different Mines in Nova Scotia for the use of the Intercolonial Railway from the 1st October, 1901, to the 30th September, 1902.

MONTH.	Dominion Coal Company, C. B.	Cumberland Railway and Coal Company, Springhill, N. S.				Canada Coals and Railway Company, Joggins, N. S.			Acadia Coal Company, Stellarton, N. S.				Intercolonial Coal Co., Westville, N. S.				Nova Scotia Steel & Coal Co'y., New Glasgow, N. N.		Minudie Coal Co'y., River Hebert, N. S.		Inverness Railway & Coal Co'y., Broad Cove, C. B.			Strathcona Coal Co., River Hebert, N. S.		Port Hood Coal Co'y., Port Hood, C. B.	Ripley & Blenkhorn, Maccan, N. S.	Micmac Mining Co., Maccan, N. S.
	Round.	Round.	Run of Mine.	Slack.	Culm.	Round.	Run of Mine.	Slack.	Round.	Run of Mine.	Slack.	Coke.	Round.	of Mine.				e.				Run of Mine.	Slack.	Round.	Run of Mine.	Round.	Round.	Round.
1901.																												
October	6224	6618	....	....	....	2903	....	70	3953	......	143	13	2637	....	....	....	59	....	212	....	....	....	....	....	....	....	....	....
November....	5942	5824	1015	40	....	1776	365	81	4358	......	61	......	3614	....	....	....	....	....	911	126	585	....	....	....	....	....	....	....
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March.........	4770	4349	....	288	....	1254	136	....	1535	......	159	.....	4055	....	19	....	918	....	1035	162	1127	....	....	....	....	284	21	56
April.	8361	4200	....	292	....	813	....	....	3483	......	39	......	4185	....	....	10	961	....	987	....	2526	....	....	83	....	....	21	....
May..........	6053	3787	267	117	....	625	...	....	2752	......	71	.....	1606	231	....	....	210	....	652	....	3002	...	29	....	....	....	19	....
June..........	9583	4725	1172	179	..	872	...	....	3649	.....	67	......	701	....	....	....	79	....	898	....	3362	....	....	....	....	....	....	....
July.....	9049	4741	36	143	12	563	14	93	2147	......	43	......	1874	17	....	....	102	....	1027	....	2027	....	....	....	....	....	....	....
August.......	7650	3317	1701	....	....	120	189	....	3371	3278	58	Culm. 25	433	441	...	....	66	19	152	....	117	....	....	115	20	....	....	....
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	79626	53199	7611	1439	31	12126	1035	381	35351	11744	913	Coke. 42 Coke 25	28842	1787	25	10	4352	87	8560	512	16601	2063	29	198	491	828	61	94

REPORT

35077.27

OF THE

EPARTMENT OF MINES,

NOVA SCOTIA,

the Year ending 30th September, 1903.

HALIFAX, N. S.
COMMISSIONER PUBLIC WORKS AND MINES, KING'S PRINTER,
1904.

T. C. Allen & Co., Printers, Halifax, N. S.

REPORT

OF THE

DEPARTMENT OF MINES,

NOVA SCOTIA,

For the Year ending 30th September, 1903.

HALIFAX, N. S.
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DEPARTMENT OF MINES.

REPORT FOR THE YEAR ENDED SEPTEMBER 30, 1903.

To His Honour THE HONOURABLE ALFRED GILPIN JONES,
Member of the King's Privy Council for Canada,
Lieutenant-Governor of Nova Scotia, &c., &c.

MAY IT PLEASE YOUR HONOUR,—

I respectfully present herewith to Your Honour the Annual Report of the Inspector of Mines, containing an account of the progress of mining operations, together with statistical information compiled by him from official and other returns.

I am,

Your Honour's obedient servant,

A. DRYSDALE,
Commissioner of Public Works and Mines.

HALIFAX, December 10th, 1903.

DEPARTMENT OF MINES.

REPORT FOR THE YEAR ENDED SEPTEMBER 30, 1903.

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Commissioner of Public Works and Mines.

HALIFAX, December 10th, 1903.

STATEMENT SHOWING AMOUNTS AND SOURCES OF REVENUE RECEIVED BY MINES DEPARTMENT DURING YEAR ENDED SEPTEMBER 30TH, 1903.

	1ST QUARTER.	2ND QUARTER	3RD QUARTER	4TH QUARTER	TOTAL
Prospecting Licenses, (apps.)	2604 50	1673 50	2251 50	2764 50	9294 00
Rents, (gold lease apps).	1654 00	798 00	1416 00	1868 00	5736 00
Gold Rentals	2088 00	726 00	3270 00	7891 00	13975 00
Licenses to Search (apps.)	6870 00	9900 00	8760 00	4560 00	30090 00
Lease apps. (other than gold or silver).	1100 00	850 00	550 00	2000 00	4500 00
Rentals (other than gold or silver)	3000 00	690 00	5250 00	12450 00	21390 00
Gold Royalty	3439 04	1865 98	1929 08	2052 54	9286 64
Coal Royalty.	153013 18	134310 08	118492 97	117548 08	523364 31
	$173768 72	$150813 56	$141919 55	$151134 12	$617635 95
Fees					$1598 32
					$619234 27

Less amount refunded on each ton of coal consumed in the manufacture of iron and steel in Nova Scotia, as follows:	April 24, 1903. Dom. Iron & Steel Co., at 6¼c. per ton	$34947 59	
	June 12, 1903, N. S. Steel & Coal Co., at 5c. "	8066 06	
	July 14, 1903, Dom. Iron & Steel Co., at 6¼c. "	9170 57	
			$52184 22

During the past year Mr. R. W. McKenzie continued the survey of coal and other leases in Cape Breton County. Mr. Lambert Lynn surveyed the Port Hood leases, and the Chimney Corner district. Surveys were made by Mr. C. W. Pye and others in a number of the gold districts.

The minerals exhibited at the Paris exhibition and at numerous places in England, were returned during the summer. Mr. Piers, the curator of the Provincial Museum, was employed for some time during the summer in making a fresh collection of our economic minerals. This was shown at the Provincial Exhibition and attracted much attention. It is proposed to maintain this collection as the basis of an annual demonstration of our mineral resources at the Provincial Exhibition. A brief catalogue and description of the minerals exhibited will be found at the end of the report.

The museum is, in a number of lines, approaching a comprehensive exhibit of our natural resources. It is found that the number of visitors for the purpose of study increases with the improvements made in the state of completeness of the various branches.

The Science Library has been enriched by a number of new books and exchanges, and is being more and more consulted. A report from the curator is appended on the Museum and Library.

The schools for colliery officials and enginemen were held as usual. It is proposed to widen the system of enginemens' certificates.

The subject of deep gold mining is receiving the consideration of your Honourable Government, and a report from Mr. Faribault, of the Canadian Geological Survey, on this subject is appended.

The Departmental drills have been kept busy during the year, and will be more fully referred to in a report by Mr. Darcy Weatherbe.

INTERCOLONIAL RAILWAY.

Statement showing the various kinds of Coal (in Tons) received from the different Mines in Nova Scotia for the use of the Intercolonial Railway from the 1st October, 1901, to the 30th September, 1902.

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	Round.	Round.	Run of Mine.	Slack.	Culm.	Round.	Run of Mine.	Slack.	Round.	Run of Mine.	Slack.	Coke.	Round.	Run of Mine.	Slack.	Coke.	Round.	Run of Mine.	Round.	Slack.	Round.	Run of Mine.	Slack.	Round.	Run of Mine.	Round.	Round.	Round.
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REPORT

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T. C. ALLEN & CO., PRINTERS, HALIFAX, N. S.

level east was driven 760 feet. No. 3 level was driven 250 feet and No. 4, 190 feet.

The No. 1 level at 260 feet was driven through the second fault.

No. 2 level west was driven through two faults.

No. 3 was driven to the first fault.

This slope is now 716 feet from the surface. I am informed that the prospecting carried on during the summer resulted in the discovery of a four feet seam of good clean coal.

Fundy Colliery, Joggins District.

This mine was formerly known as the Hardscrabble. A slope was sunk about 500 feet and levels turned off on both sides. I trust that next year I will be able to report considerable progress at this colliery, as the company seem prepared to extend their operations as rapidly as possible.

Chignecto Mine, Maccan.

This colliery has been worked by the Maritime Coal Company during the past year. The company have now completed sinking to a depth of 1,400 feet with levels turned away at 1,000 feet, and at 1,400 feet. There are two balances in operation on the 1,000 feet level, and two being completed on the 1,400 feet level. The ventilation at this mine is in good shape. The fan running at 30 revolutions gives ample ventilation. The boiler plant has been increased by two more tubular boilers. Twenty-two new houses have been built for the workmen, and a new store and office.

N. B.--Referring to my last report there was an error. The two last paragraphs, under the head of Chignecto Mine, pages 17 and 18, did not apply to this mine, but the three last paragraphs under the heading, No. 3 slope, Joggins Mine, pages 12 and 13, should appear in the Chignecto report.

Debert Mine, Colchester County.

Colchester Coal and Railway Co.

This Company is starting to open up a seam of coal on the Debert River, which measures about 4 feet 6 inches of excellent coal, free from sulphur and suitable for coking. They have started a slope which is now about 150 feet deep. The ultimate depth of the slope is expected to be about 1,200 feet. An old slope about 60 feet to the eastward, which was sunk about 15 years ago, will be opened out and serve as a back slope. The necessary engine, boiler and pumping equipment is being placed at the bankhead. The seam dips at an angle of 28 degrees, and is said to be unusually dry. The route for a branch railway, about four miles long, from Debert Station to the colliery has been surveyed and presents no engineering difficulties.

MARSH COLLIERY, PICTOU COUNTY.

The Nova Scotia Steel and Coal Company have worked this mine steadily during the year. The slopes have been extended until they are now 2,175 feet long. Working levels have been turned off to the west on the main slope at a depth af 1,686 feet, and are now in about 120 feet.

At the 1,375 ft. level a new haulage engine has been placed in position. It is of the Webster Camp and Lane Co. standard, 5 in. by 6 in. cylinder and two drums 20 in. by 6 in.

No. 1 balance on these levels is driven through to the top levels, and has eight bords. No 2 is partly in operation. A new wash-house has been built for the men and is supplied with hot water and steam heat.

ACADIA COLLIERY, WESTVILLE.

During the past year work has been continued in the No. 10 and 11 lifts. No. 12 lift has been sunk 300 feet and levels will be turned off north and south. In the No. 10 lift south, the coal is being steadily won outwards. No. 2 jig has been driven through and the balances are being worked toward the levels. No. 1 jig has also been put through, and the extraction of pillars commenced at No. 9 level.

There are pillars still awaiting extraction in Nos. 1, 2, 3, 4, 5 and 6 jigs, and there is also a 600 feet pillar inside of No. 6. In No. 10 lift north there is a pillar 600x65 feet to be taken out. The south levels in No. 11 lift are in about 2,600 feet, and No. 2 and 3 jigs have been put through to the No. 10 lift. Nos. 4, 5 and 6 jigs are under way.

The north levels in No. 11 lift were advanced about 700 feet in faulty ground, and are now standing. A return airway has been driven up through No. 7 lift and connected with No. 6. Other changes are being made in the air courses, and a more powerful fan put in place which will probably improve the ventilation considerably.

The new bankhead completed last January is giving entire satisfaction. The boilers have been placed alongside the winding engine under the same roof. The compressor plant has been moved to a position by the fan-house.

ALBION MINES, STELLARTON.

These mines have been worked steadily during the year. The haulage of water at the Foord pit engine by tanks has been stopped. Arrangements have been made to handle the water in the lowest seam, McGregor pit, where the large Jeansville pump is located. The water is collected from the Cage pit and Third seams in the McGregor pit where there is to be a lodgement holding 1½ million gallons of water. From this point it will be discharged by the new pump. The McGregor pit is about ready to start sinking, preparations are being made for using larger boxes, etc. In the third seam slope electric signal bells have been installed, and another sinking is in progress. The south side levels in the third seam struck an upthrow fault, where the coal is inferior.

Improvements have been made in the boiler plant, pumps, etc. In order to secure the water supply for the boilers, a 4 in. pipe has been laid for a distance of 3,200 feet to connect with the Stellarton water works.

It is stated that the company have in contemplation the sinking of two new shafts to the dip of the Foord pit for the purpose of regaining the well known Albion Main seam.

VALE COLLIERY.

The operations in this mine were principally in the new sinking on the north level. Five new balances were started during the year. The sinking was driven a distance of 500 feet, and when stopped was in good coal. In July an underground stream of water was cut in the north level which gave 16,000 gallons of water every twenty-four hours. This water worked down to the sinking faces. An attempt was made to keep it out by boxes, but the haulage distance was too long. After some trouble, other arrangements were made by which the water was taken off the faces. On the north levels work is being carried on. Pillars are being drawn in No. 3 and 4 balances. On the west side the levels were driven in 1,200 feet, and showed good coal. The output was 450 tons a day. Improvements have been made on the surface to the boiler plant, new houses, built, etc.

DRUMMOND COLLIERY,

No. 1 slope has been driven 498 feet and is now 400 feet below No. 15 lift, and 6,538 feet from the surface. No. 2 slope has been advanced 692 feet. No. 14 south main level has been advanced 1,268 feet, and is now 3,677 feet from No. 1 slope. No. 5 balance, 14 south, was completed in July and is 580 feet long. Other levels and workings have been systematically advanced. The tunnel to the third seam has been advanced 200 feet from the Scott Pit.

No. 4 Slope.

In this slope development is progressing satisfactorily, the workings from the bottom of the slope being extended into a section which some years ago was abandoned as the coal was thought inferior. The seam now turns out about 7 feet of very good coal.

Miscellaneous.

I may add that there has been some prospecting work done at South Ridge about 15 miles below Oxford in Cumberland County, and also in the neighborhood of Parrsboro, but I have not heard of any valuable discoveries.

I visited the Londonderry Iron mines during the year and found the levels and drifts well timbered and ventilated.

Cape d'Or Copper Mine, Cumberland Co.

Since my last visit, development work at this mine has been continued underground.

In No. 1 shaft the west tunnel was driven 82 feet; the southeast tunnel was driven 151 feet from the slope, going in a southwardly direction from the west tunnel 150 feet. The crosscut from the bottom of this slope was driven until it reached a distance of 398 feet. In the Bennet Brook shaft all the working places were extended a short distance. A good deal of work was also performed in the No. 2. or Hanway Lode. During the year, at this point, two large and one small hoisting engines, one Rand duplicate air compressor, and one 100 horse power boiler were installed. The pumping power of the property has also been increased.

On the 30th of June, James Kendall, miner, was killed through carelessness in picking out dynamite that had failed to detonate.

Cumberland Copper Co., East Wentworth.

This company succeeded the Munroe-Thompson Company, early in the present season. The new company has built a laboratory, and completed the roaster, etc. They claim now to have a complete reduction plant. During the year very little underground work has been performed, but the company claim that they have a considerable amount of rich ore in sight.

I append summary of accidents, and remain,

Yours truly,

A. V. CAMERON,

Deputy Inspector of Mines.

ACCIDENTS DURING THE YEAR.

No.	Date.	Mine.	Name.	Occupation.	Remarks.
	1902.				
1	Oct. 28	Drummond Colliery	Thomas Ross	Laborer	Slightly injured on surface, struck by boxes.
	1903.				
2	Feb. 5.	Acadia Mine	Wm. O'Brien	"	Leg broken by moving box.
3	Mar. 3.	Drummond Colliery	Hugh Stewart	Boy	Collar bone broken.
4	" 3.	Albion Mines	Wm. McKenzie	"	Leg broken by jumping on train; died March 4th.
5	Feb. 17,	Drummond Colliery	Isaac Abbot	Laborer	Arm broken.
6	Jan. 29.	Acadia Mine	James McLeod	"	Hurt on main slope by moving rake; died February 15th.
7	Mar. 9.	No. 3 Springhill	John Morrison	Loader	Leg broken by a fall of coal.
8	Feb. 4.	" "	Henry Fisher	Miner	Instantly killed by a fall of coal.
9	Jan. 28.	Albion Mines	Andrew Hayes	Loader.	Leg and knee joint injured.
10	Nov. 24.	No. 2 Springhill	James G. Wilson	Pick Stancher	Fatally injured by a full rake of boxes.
11	Apl. 1.	No. 3 Springhill	Chas. L. Purdy	Miner	Killed by a fall of rock.
12	Oct. 10.	Albion Mines	George Munroe	"	Leg broken and other injuries.
13	May 11.	Vale Colliery	Murdock McLeod	"	Hurt by a fall of stone.
14	June 2.	Drummond Colliery	Wm. Hale	Shute Tender.	Hurt by being jammed against rib by runaway box.
15	" 21.	Acadia Mine	Chas. Stewart	Laborer	Back hurt; caught between box and roof.
16	" 8.	" "	Stephen Wadden.		Hurt by riding rake.
17	" 11.	Minudie Mine		Loader	Hurt by a fall of roof stone.
18	" 12.	Springhill	Oscar Hanson	Shiftman	Arm broken by being caught between boxes.

19	" 28.	No. 2 Springhill	John McMillan	"	Fatally injured by being jammed between box and roof.
20	" 13.	Vale Colliery	James O'Brien	Laborer	Compound fracture of leg.
21	July 13.	Drummond Colliery	Daniel Finlay	Shiftman	Killed by rake in hoisting slope.
22	" 22.	Vale Colliery	Harry Wambolt	Miner	Killed by a fall of stone at face of working place.
23	" 25.	Chignecto Mines	F. Blenkhorn	Boy	Injured by cage.
24	Aug. 1.	Albion Mines	Rod. McKenzie		Leg broken by a fall of coal.
25	" 25.	Drummond Colliery	John W. Ryan		Fatally injured.
26	Sept. 5.	Albion Mines	George Forrestall		Hurt by jumping off moving cage.
27	" 26.	No. 2 Springhill	Geo. Cunningham	Day Examiner	Struck by empty rake at bottom of slope; had leg broken.

CAPE BRETON COUNTY.

The sales from this County amounted to 3,279,905 tons against 2,924,967 tons in 1902. The production of the Dominion Coal Company shows an increase, being 3,283,117 tons compared with 2,952,758 tons in 1902. The Nova Scotia Steel and Coal Company raised 397,366 tons against 241,891 tons in 1902.

The Cape Breton Coal and Railway Company have acquired large tracts of coal lands in the rear of Cow Bay and are arranging for operations on a large scale.

During the past year Mr. P. Neville, who discharged the duties of Deputy Inspector for the Island of Cape Breton found the work too arduous, owing to the new mines in Inverness County and the increasing extent of the Glace Bay mines and resigned his position.

His duties, often of a delicate and arduous character, were discharged in a manner most acceptable to the Department, and his sincerity and conscientiousness secured the respect of managers and workmen. His long experience in the mining districts is still at the service of the Department. The work of the Inspector has been divided between two deputies, Messrs. John Cadegan and Neil A. Nicholson. The former taking the southern and the latter the northern half of the inspection work.

The Inverness County mines at Broad Cove and Port Hood have continued to increase their output. At Mabou the preliminary work of development is being pushed as fast as possible.

The appended reports will show the progress made last year in the Cape Breton mines.

OLD BRIDGEPORT, December 2, 1903.

E. GILPIN, JR., ESQ.,
Deputy Commissioner and Inspector of Mines.

SIR,—I beg to submit my report on the northern division of the mining district of the Island of Cape Breton.

The coal production of this division has increased with much rapidity. I am pleased to be able to report that the management of the collieries have complied with the mining law. Owing to the rapidity of the increase of the workings and of the amount of explosives used, the ventilation of these mines has become an important matter. The number of men employed without experience in mines has added materially to the list of accidents.

The fire at Dominion No. 1 has shown the necessity of correct plans, of strict attention to the principles of mining, and to the necessity of barriers between large collieries.

The fatal accident at the Reserve Colliery pointed out clearly the necessity of strict discipline in all matters relating to the handling of gas and the admission of workmen to the faces.

I refer in some detail to the fire at Dominion No. 1.

INVERNESS COUNTY, PORT HOOD COLLIERY.

This colliery worked steadily throughout the year, and more than doubled its output. The slopes were extended 70 feet. The north level is now in 2,400 feet; the south level is in 1,500 feet, and is standing against a fault which has not yet been cut.

No. 2 level south passed through two faults which are 250 feet apart, and 93 and 100 feet thick respectively.

The mine is in good condition, being well ventilated and securely timbered. The slopes are in submarine areas, and 400 feet under the water. At the entrance to the submarine coal the strata are 340 feet thick.

On the surface more miners' cottages, etc., have been built. The bankhead has been fitted up with slack pockets to hold 500 tons, and are provided with a Jeffrey conveyor. New pockets were also added to the wharf.

MABOU.

The No 2 slope at this colliery has been driven 650 feet. Levels were turned away at 400 and 500 feet. After the slopes had been driven 580 feet the coal was found to change suddenly from an angle of 75 degrees to one of 8 degrees. The slopes are now being altered to meet the new dip.

The No. 3 slope is down 450 feet, where levels were turned away at the face. A large bankhead has been fitted up with modern machinery, an air compressor placed in position, and other parts of the plant completed. The railway referred to in the last report is completed.

INVERNESS COLLIERY, BROAD COVE.

At this colliery the slopes of No. 1 mine have been driven 400 feet further, under the sea, and have at this point a thickness of 350 feet of overlying strata. The East and West levels have been materially extended during the season. A Northey pump has been placed on the No. 3 level, forcing the water to the Cameron pump on the No. 2 level. Two lodgments capable of holding 200,000 gallons have been completed. A Walker fan giving 250,000 cubic feet, with a 2 inch water gauge, has improved the ventilation.

No. 2 slope is 2,558 feet from No. 1, and its course diverges from it. It is proposed to connect No. 2 with No. 1. When this is done No. 2 will cease hoisting until the surface plant is completed. The old workings to the rise which were on fire were opened out and traversed. Shortly after the fire reappeared, when these workings were at once walled up. A level has been driven 900 feet in the crop coal and it is proposed to take out everything to the rise.

The wharf at Port Hastings has a storage capacity of 4,500 tons. Shipments were made all last winter from it, there being no hindrance from ice. The distance from the mine to the wharf is 61 miles.

I give the following list of machinery installed at this colliery, thinking that it may be of interest as showing the system at present adopted in working Cape Breton collieries.

NO. 1 COLLIERY.

One hoisting engine made by the Dickson Mfg. Co., Scranton, Pa., consisting of a pair of 16x30 inch engines, geared to 2 friction drums 8 feet by 3 ft. 6 inch, grooved for 1⅛ inch rope.

One Ingersoll-Sergeant Air Compressor made by the James Cooper Mfg. Co., Montreal, P. Q., with cross compound Corliss Steam Cylinders 20 and 36 by 48 inches, and compound air cylinders 19¼ and 32¼ by 48 inches

One Elecric Light Unit with a nominal capacity of 800, 16 candle power lights, consisting of a 12x12 inch Robb-Armstrong engine direct connected to a 50 Kw. 125 volt C. G. E. generator, controlled by a marble panel switchboard of the usual type, supplied by the Canadian General Electric Co.

One 18x7 ft. Walker "Indestructible" ventilating fan, rope driven from a 14x30 inch Walker engine. The fan has a steel plate housing and is fitted with Walker Bros. patent "Anti-Vibration" shutter, which makes it run very smoothly, and practically noiseless in operation. It is arranged to work either exhausting or blowing, and the change from one to the other may be made by a couple of men inside of fifteen minutes without stopping the fan. All bearings are fitted with self-oiling rings and the two at the inlets have dust shields.

The engine is of the single cylinder slide valve type, fitted with Meyer expansion valves, and is of very substantial construction throughout. The drive consists of five 1⅝ inch diameter patent interstranded cotton ropes, running off a 12 ft. pulley on the engine to a 9 ft. pulley on the fan shaft.

The rated capacity of the fan is 250,000 cubic feet on a 2 inch water gauge.

One Heine Patent Water Tube Boiler of 300 nominal H. P. made by the Canadian Heine Safety Boiler Co., Toronto, Ont., fitted with Sturtevant Induced Draft Apparatus with stack, Y connection and fan and engine for a second boiler of the same capacity.

No. 2 Colliery.

One 6¼x8 inch Double Cylinder Single Friction Drum Hoisting engine, made by the James Cooper Mfg. Co.

Two Upright Tubular Boilers rated at 14 and 20 H. P. each.

There is now in course of erection on the bank at No. 1 Colliery a slack conveyor, bucket elevator and knocking screen for separating the duff from the slack passing through the present shaking screen, and also a creeper for pushing the empty boxes over the grade on the bankhead. These will be driven by continuous rope gearing from an 8x10 inch upright engine supplied by the Brown Machine Co., of New Glasgow.

Victoria County, New Campbelton.

A creep on the slope in the early part of the season gave much trouble, and inteferred with the pumping. Before the water was overcome the season was too far advanced to permit of much shipping. The workings on the lower level had to be abandoned for a time, and work was confined to the upper lifts. The old level was cleared out and retimbered. The company propose opening a new slope to the north of the present workings.

Cape Breton County.

Nova Scotia Steel and Coal Company, Sydney Mines.

The output of this company shows an increase of 155,475 tons over last year. This is largely due to the development of No. 2 and No. 3 collieries. In No. 1, hitherto known as the Sydney Mines, the deeps have been extended 800 feet and workings opened out, pillars acted toward the boundary line, and in the new orkings, owing to the length of the haulage from the th side of the shaft, a passageway was opened through istrict, in order to form an endless haulage road ip system. The haulage engines are on the surface. e pump of large size, for the purpose of assisting the np at the bottom of the shaft, has been placed, thereby concentrating the pumping work. This colliery is still r closed light law. Compressed powder is generally used, its use should be continued, as one section of No. 1 South is dry usty, and no explosives causing windy shots should be per- to be used.

SYDNEY MINES, NO. 2 COLLIERY.

slopes are now 2,600 feet long, having crossed the shore line eet from the crop. The cover at the shore line is 104 feet. thin cover forces the Company to drive 3,400 feet from the crop ir first lift of 450 feet. This slope is in what is known as the 's Cove seam. This seam is principally mined by machines. is a fan shaft and Capel fan.

SYDNEY NO. 3 COLLIERY.

During the year this slope has been sunk 1,600 feet. Three lifts have been opened, coal extracted, and 200 feet of a barrier left next the crop. This seam is also to be mined by machinery. The mine is being equipped with a substantial and efficient supply of machinery.

The starting of the steel plant has led to many improvements at Sydney Mines. Under the offer of cheap land and time payments, many miners are building houses for themselves. A large number of single and double cottages have been built by the Company. The accident list at this colliery is large. Seven miners were injured fatally, and seven met with accidents. More care is necessary on the part of both the company and the men.

SYDNEY COAL COMPANY.

The output of this colliery was a little larger than last year. The levels have been extended and are now 2,290 feet from the mouth of the drift. The ventilation, which is natural, is fair.

DOMINION NO. 1.

Owing to the fire (March 19th) the regular output of the colliery, which is nearly 400,000 tons, is much below that of last year. After nction of the fire, the work of re-opening was commenced and carried on as fast as possible. About 1,000 tons a day are now being taken from the upper workings. Bodies of gas are met with as the water is lowered. These are removed when the men are out of the mine. Work is being carried on with closed lights, and safety explosives are recommended until the mine is in thorough order again.

DOMINION No. 1, FIRE.

The following memorandum on the operations connected with the fire at this colliery may be of interest. On March 19th, about 3.30 a. m., fire broke out in a cross-cut between the north main deep and the back deep. Some men riding up the deep in a box noticed heat and smoke, after passing this cross-cut which is some distance from the bottom of the pit. Instead of endeavoring to put out the fire, which when they were there was apparently inconsiderable, they went and notified the official in charge. He summoned assistance, and with a couple of men did what he could to put out the fire which was now rapidly growing larger. There was some little delay before assistance arrived, and the fire was then spreading rapidly. For some time a hand to hand fight was maintained with the fire, firemen from Sydney being called upon for assistance. It was soon found that it was impossible to prevent its spread, and the air was shut off as much as possible by stoppings. In the meanwhile dams were being built at every opening below the fire with a view to confining the water, and forcing it back upon the fire. An attempt was made to work in above the fire from the angle deep to the north. After carrying in an air-current through a heavy body of damp and smoke for 1,000 feet, fire was seen to have travelled up the deeps so as to be ahead of this opening. It was also apparent that the fire had worked its way into the crush where the pillars had been taken out between the north main deep and the angle deep. It then became evident that it was impossible to attack directly the fire which was entrenched in this broken ground. An investigation was then made of the workings immediately below the seat of the fire to see if it would be possible to construct a series of water tight dams. The pillars below the fire section were found to be thin and crushed, and the workings were too much fallen to be entered. It therefore became apparent that the only resource left was the flooding of the mine as quickly as possible. The barrier between Dominion No. 1 and the Reserve was then travelled and sounded, and it was agreed that the barrier pillar was strong enough to resist the pressure of water required to fill Dominion No. 1. However, the points believed to be the weakest were strengthened by bracing, etc. On the 28th of March the smoke coming from the shaft was seen to increase suddenly. An examination was made and it was found that the fire was within 200 feet of the pit bottom. The men were at once ordered out of the mine and it was decided to close the mine down, seal it and flood it by making an opening through some old workings out on the beach in the crop coal. This was done, a distance of 100 feet having been driven by the aid of machines through the crop in four days. While it required only 16 days continued flooding to cover the seat of the fire, the dilatory methods adopted by the Company consumed 47 days. There was apparently no reason for this dilatoriness, and it might have been attended with serious consequences. On May 10th the temperature of the shaft and the absence of smoke encouraged an examination of the mine. After the mine had been opened and aired for a few hours, the exploring party went in and were met by smoke. It was apparent that enough water had not been put in. The representatives of the Department fearing the strength of the barriers, ordered the men out of the main Reserve deep, and insisted that the water should be allowed to run in continuously until the fire section was completely submerged.

On May 23rd a fresh exploration was made and the bottom of the shaft was reached by the travelling road, and it was apparent that the fire was out. As soon as the mine was cooled off and put in order, men were set at work putting in pumps and cleaning up. Finally 20 pumps were put in use unwatering the mine and displacing the water which was put in, and calculated to amount to 580 million gallons. The work of reopening is slow and tedious owing to falls, and the immense amount of ground to be traversed to the faces.

The fire and the operations connected with it did not result in a loss of life. Eleven horses were suffocated the morning the fire broke out. An investigation was held into the origin of this fire, at which the Inspector of Mines and his Deputies were present. All the men who were near the origin of the fire or connected with the charge of the pit at the time, were examined. Nothing was elicited that threw any light on it. The cross-cut had a wooden brattice in it, and several coal tubs which had been broken up in an accident had been thrown in there. It is supposed that some miner walking up the deep in some accidental manner lighted it.

The cross-cuts on main deeps and levels should be of brick or other permanent material, and they should not be allowed to contain any inflammable material.

I append some statistical information, analyses, etc., which may be of interest,

And remain, yours truly,
NEIL A. NICHOLSON,
Deputy Inspector.

AVERAGE NUMBER OF CUBIC FEET OF AIR PER MINUTE CIRCULATING THROUGH CAPE BRETON MINES YEAR ENDING SEPT. 30TH, 1903.

Dominion No. 1	100,000
N. S. S. & C. Co. No. 1	100,000
" " " " No. 2	37,000
" " " " No. 3	20,200
Broad Cove, No. 1	40,000
" " No. 2	4,000
Mabou, No. 2	8,800
" No. 3	5,724
Port Hood	28,000
New Campbelton	7,750
Sydney Coal Co	4,000

COAL ANALYSES OF NOVA SCOTIA STEEL & COAL COMPANY, LIMITED.

	SYDNEY No. 1.	SYDNEY No. 2.	SYDNEY No. 3.
Moisture	1.46	2.10	1.46
Vol. Com. Matter	38.38	36.50	38.38
Fixed Carbon	55.65	56.15	55.65
Ash	3.27	5.25	3.27
Sulphur	1.23	3.26	1.23

COKE ANALYSIS NOVA SCOTIA STEEL & COAL COMPANY, LIMITED.

Coke yield	62.6
Gas contents vol. mat.	34.3
Water	3.1

COAL ANALYSIS OF PORT HOOD COAL COMPANY, LIMITED.

Fixed Carbon	56.00
Vol. com. matter	33.00
Water	2.00
Ash	6.00
Sulphur	3.00

COAL ANALYSIS OF INVERNESS RAILWAY & COAL COMPANY, LIMITED.

Carbon	65.00
Sulphur	4.00
Water	9.00
Ash and refuse	3.00
Vol. com. matter	19.00

Accidents in Cape Breton Mines During Y

DATE.	MINE.	NAME.	AGE.	OCCUPATION.	REMARKS.
1902.					
Oct. 3.	Port Hood........	John L. Morrison..............		Deputy.........	Slightly injured while riding on wood tram going down slope.
" 14.	"	Allan H. McEachern.........		Laborer........	Slightly injured by being jammed between full boxes on level road.
" 10.	N. S. S. & C. Co.	James Price, married........	30	Miner...........	Shot went off, striking him on back of head.
" 6.	Port Hood........	Neil McLean....................		Chain Runner	Leg broken, struck with empty box on landing.
Dec. 12.	N. S. S. & C. Co.	William Snow, single........		Laborer.	Foot caught in conveyor scrapers.
1903.					
Jan. 22.	" "	Robt. Watson, married......	29	Miner...........	Leg broken by fall of coal.
" 29.	" "	William Hamilton, married.	30	"	Killed by runaway trip on slope.
Feb. 9.	" "	Alex. McKinnon, single......	13	Tally boy......	Injured, cage being raised to high slides came out striking him on head.
Mar. 12.	" "	Daniel McPhee single.......	18	Driver..........	Shoulder injured by horse falling on him.
" 27.	" "	Jacob Gondrike....................	......	Miner..........	Injured by shot going off while re-lighting squib.
April 22.	" "	James Forrest, single........	31	"	Leg broken by fall of coal.
June 20.	" "	Cass McLennan, married...	30	"	Leg broken by fall of stone.
" 4.	" "	John Roberts, married......	30	"	Injured; lighting squib and shot went off.
" 10.	" "	Wilkie Stewart, single......	14	Tally boy......	Killed; jammed between tub and tipple at pit head.
July 28.	" "	Edw. McMullin, single......	22	Miner...........	Slightly injured by fall of coal.

" 15.	" "	Thomas Bailie, single.......	17	Driver..........	Arm broken by slipping on rail.
Sept. 11.	" "	Ignation Corkey, single.....	21	Laborer........	Legs badly cut by falling over donkey rope.
Jan. 2.	Port Hood........	Robert J. Bell................	......	M. Engr.......	Arm taken off; caught in belt wheel of Electrical Engine.
Feb. 19.	"	Percy White....................	......	Driver..........	Leg broken by horse falling on him.
" 21.	"	John Merritt....................	......	Chain Runner	Killed while riding on trip, coupling broke hurling boxes against roof.
Jan. 13.	"	Edward Watts................	......	Shift man......	Leg broken; struck by cage.
April 16.	Mabou	J. J. Cameron...........	......	Laborer	Fatally injured; caught by box on slope.
Jan. 6.	Dominion No. 1.	Charles D. Marshall, single	19	"	Arm broken; jammed between full tubs.
1902. Dec. 6.	" "	Angelo Moncusco, married.	60	"	Killed by full tub on main haulage road.
		Arch Morrison, single.......	24	"	Seriously injured by runaway tub on main haulage road.
" 29.	" "	Hugh Elliott, single.........	23	Miner...........	Fatally injured by fall of coal at room face.
" 26.	" "	George Traynor, single......	15	Driver..........	Leg broken by fall of full tub.

E. Gilpin, Jr., Esq.,
Deputy Commissioner and Inspector of Mines, Halifax, N. S.

Sir,—I beg to submit to you a report on the coal mines in the Glace Bay and Port Morien Districts, Cape Breton County, for the year ended September 30th, 1903:

Gowrie and Blockhouse Collieries.

Development has been continued at this colliery. The levels have been extended 2,000 feet since the last report. Owing to there being some question as to the thickness of the strata underlying Port Morien the levels were turned to the left and driven through part of the Dominion Coal Company's lease on such a course that when they re-enter the property of the company there will probably be ample cover for mining operations. An endless rope haulage has been placed in these deeps, and improvements made in the drainage and ventilation. About 600 additional horse power has been added to the boiler plant, a temporary Rand compressor has been installed machinery for the underground haulage, etc., a wash-house has been erected, and there will also be a suitable bankhead. Fifteen visits were made by Mr. Neville and myself during the year.

The average amount of air circulating through this colliery is 30,000 cubic feet per minute.

Caledonia.

All the principal levels, etc., have been considerably advanced in this colliery. Pillars are being drawn to the rise of the west levels on No. 1 and 2 west landings, and on No. 2 east landing in new slope. On No. 1, 4 and 5 west landing, and on No. 3 east landing, west deep, No. 2 and No. 6, west landing in east deep, these pillars are being successfully drawn, and a very small percentage of coal lost.

A new brick boiler house has been erected on the surface, This colliery was visited 14 times during the year.

The average amount of air circulating through this colliery is 92,000 cubic feet per minute.

Dominion No. 3.

The slopes at this colliery are 3,960 feet long. The distance from slope mouth to bankhead is 5,000 feet. During the past year the main slopes were driven 950 feet and levels turned away. The rooms from the levels have been worked to the rise in each section and the pillars drawn back. Bottom levels have been driven through to the Caledonia workings, a distance of 1,200 feet, to allow the water of this mine to drain into the Caledonia.

Two concrete dams four feet thick, lined on each side with 12 x 12 inch hard pine, are inserted in the pillar three feet on each side, and in the bottom and roof 2 feet. In the lower dams there two pipes to pass the drainage. Hose connections have been made at intervals of 400 feet from the top to the bottom of the 8 inch air pipe. An engine on the surface connects with this pipe, and is ready to supply water in case of fire.

The average amount of air passing through this colliery is 45,000 cubic feet per minute. This mine was visited 14 times during the year.

DOMINION No. 2, PHALEN SEAM.

The bottom main shaft has been sunk 60 feet below the coal and storage tanks and revolving tipples put in. Three deeps were broken off the levels 1,500 feet north of the shaft. They have been driven 1,300 feet and rooms turned away north and south. Similar progress has been made on the south side.

The average amount of air circulating through this mine is 175,000 cubic feet per minute.

HARBOR SEAM.

The headways on the south side of the shaft were driven 1,584 feet to the barrier between the Sterling and Harbor seam pits. It is intended to pump out the Sterling pit and continue the headway. Other extensions have been made with a view to bringing the workings in this seam into full operation.

The amount of air passing through this mine is 78,000 cubic feet per minute.

Haulage.—In the Dominion No. 2, Phalen and Harbor Seams, four tail rope engines, having cylinders 8 inches by 10 inches, have been placed in position to haul out of the deeps in these seams. Six high pressure air locomotives have been introduced and necessary pipes and stations laid for charging. The compressor on surface shows a pressure of 950 lbs., and the locomotives carry a pressure of about 850 lbs. in the mine. Four of these locomotives weigh 17 tons each; the others about 9 tons.

Pumps.—Two large Northey pumps, having steam cylinders 20 inches by 24 inches and water cylinders 8 inches by 20 inches, are being placed in the Phalen seam. Water pipes are being laid in the main entrances to the mine, with hose connections every 500 feet, to furnish sprinkling water and for fire protection. The main air pipes are also connected with the pump, and once a week the roads and working places are thoroughly sprinkled. A new shaft is being sunk about 250 feet north of the present fan shaft and is now 180 feet deep. This shaft, when completed, will be 11 x 37 feet inside, and will be used as an air shaft and to lower and raise both men and material. On the surface the equipment is approaching completion. A number of dwelling houses have been built, a hotel, etc. This mine was visited 23 times during the past year.

HUB COLLIERY.

On the first day of February, 1903, a start was made to take the water out of this mine, and on the 10th of July the bottom of the shaft was reached. Pumping has since been continued to the deep, and it is expected that about the 1st of March the mine will be ready for regular operations. The pit when unwatered, was found to be in good condition. It is intended that this mine shall be worked entirely by coal cutting machinery, and installations are in progress for that purpose. The bankhead has been repaired and put in good condition, and they have the necessary machinery for working the mine on a large and continuous scale.

INTERNATIONAL COLLIERY.

The deeps on No. 11 landing have been extended 400 feet to the barrier, 300 feet thick, separating this colliery from No. 2. Workings have been extended in other directions, and it is anticipated that when the shaft now being sunk at Dominion No 2 is completed and the water from this mine handled at that point, there will be a large section of the pillars to draw.

Pillars are now being drawn on No. 1 and No. 2 levels. An electric light and telephone system above and below ground has been put in. The average amount of air passing through this mine was 64,000 cubic feet per minute. The mine was visited 14 times during the year.

RESERVE COLLIERY.

FRENCH SLOPE.

The deeps and levels have been extended during the year. Pillars have been successfully drawn on No. 4 north level, leaving very little coal. The main pump has been connected with the main air pipe, and hose connections put in, so that water can be pumped to any part of the workings.

EAST SLOPE.

have been advanced 1,000 feet and four
th. The pillars have all been taken
th level, and No. 2 except those

necessary to support the marsh land. An air shaft has been sunk on the south side of the slope near the crop to serve as an intake instead of the haulage road.

MAIN SLOPE.

The main deeps are now at the barrier separating this working from Dominion No. 1. Pillars have been drawn on No. 9 and 10 landings. No. 11 Section, which filled with water during the fire, has been pumped out and is now working. Improvements have been made in the pumping arrangements. The amount of air circulating through this mine averages 270,000 cubic feet per minute.

An electric light plant and telephone system has been installed. Improvements have been made to the boiler plant, etc.

In conclusion I may say that the mines in this district are in good condition, and the management at the different collieries gives every attention to safeguarding life and property. As a rule the requirements of the Coal Mines Regulation Act are well carried out. It has been agreed between the Deputy Inspectors representing the Department of Mines, and the Dominion Coal Company, that in future the barriers of the underground workings between the different mines be not less than 200 feet in thickness, and that a travelling road or airway 12 feet wide, be left on each side of each barrier, and be kept in good condition. Pillars not less than 60 feet in length to be left next these air-ways. The rooms as they approach the barriers, to be narrowed to 12 feet and be driven for the last 20 feet at this width, leaving the pillars 28 feet wide at this point. Pillars, not less than 100 feet in thickness, are to be left in future between the deeps. Pillars not less than 50 feet thick are to be left at the bottom of each lift below the levels.

During the year considerable prospecting has been done south of Cochrane's Lake by the Cape Breton Coal, Iron and Railway Co. The Moseley seam was traced for about two miles east and west of the Moseley pit. The coal was found to be 5 feet 10 inches thick near the crop, increasing slightly to the dip. The seam is lying at an inclination of abont 1 in 10, having a sandstone and shale roof. Preparations are being made for opening this seam, a line of railway having been surveyed to Louisburg Harbor, land cleared and machinery ordered, etc.

I beg to remain,
Yours truly,

JOHN CADEGAN.

Accidents in Cape Breton Coal Mines, Southern District, during year ended Sept. 30th, 1903.

No.	DATE.	MINE.	NAME.	AGE.	OCCUPATION.	REMARKS.
	1902.					
1	Oct. 6.	Reserve	John Hines	38	Miner.	Slightly burned by two cans of powder being accidentally ignited.
2	"	"	Daniel McIntosh	30	"	do do do
3	"	"	Thos. Arthur	28	"	do do do
4	"	"	Patrick Hogan	26	Loader.	Badly do do do
5	"	"	John Hogan	23	"	do do do do
6	Oct. 9.	Caledonia	Alex. Morrison	24	Miner.	Killed by fall of coal from pillar.
7	Oct. 22.	Dom. No. 2	Sylvan Landry.	21	Loader	Leg broken; caught between coal box and props.
8	Oct. 29.	Reserve	John McLeod	29	Miner	Killed by fall of coal from pillar.
9	Oct. 30.	International	Silvester Fortune	14	Trapper	Arm broken; fell off empty coal box.
10	"	Dom. No. 2	Fred. Way	21	Driver	do caught between box and prop.
11	Nov. 21.	" "	John McKinnon	20	Car Tender	Foot crushed under car on surface.
12	Dec. 5.	" "	Angus Morrison	22	Helper	Leg broken by fall of stone from roof.
13	Dec. 13.	Dom. No. 3	Michael Bodrat	25	Loader	do do do do
14	Dec. 15.	" "	Fred. Lanswood	19	Laborer	Killed on slope; run over by full boxes.
15	Dec. 30.	Dom. No. 2	Peter McDougall	22	Loader	Seriously injured across back by fall of coal.
	1903.					
16	Jan. 13.	Dom. No. 3	Jos. Quann	39	Landing Tender	Killed; caught between loaded box & pillar.
17	Jan. 17.	Dom. No. 2	Angus Stewart	22	Car Tender.	Foot crushed under coal car on surface.
18	Feb. 4.	" "	John J. Smith	26	Roadman	Leg broken by fall of stone from roof.
19	Feb. 18.	Caledonia	Jos. Parsons	19	Landing Tender	Collar bone broken; caught between box and pillar.

20	Feb. 21.	"	Alex Pass...............	40	Miner................	Burned on face & hands by gas in headway.
21	Feb. 26.	Dominion No. 2.	Emile Keehn..........	38	Timberman......	Fatally injured; run over by loaded box.
22	Mar. 5.	International.....	Marshal Leonard......	14	Trapper...........	Leg and arm broken; run over by empty trip.
23	Mar. 12.	Dominion No. 2.	Harry Rosefield.......	22	Loader............	Three ribs broken by fall of coal from face.
24	Apr. 8.	Reserve...........	Matthew Stubbert ...	42	Miner..............	Killed by miss shot; exploding while examining it.
25	Apr. 13.	Dominion No. 2	John A. McNeil.....	14	Trapper........	Killed; run over by a loaded box.
26	Apr. 17.	Dominion No. 3	Robert Croft	28	Miner	Fractured ankle by fall of roof stone.
27	Apr. 18.	International.....	Frank Campbell......	27	"	Seriously injured by piece stone from roof.
28	Apr. 24.	Reserve..........	Michael McNeil	28	Miner	Killed by explosion of gas in the 8 South level, French slope.
29	"	"	Henry Jackson	24	Helper	do do do
30	"	"	Joseph King	25	Loader	do do do
31	"	"	William King......	24	Driver	do do do
32	"	"	William Whiteway	25	Loader	Seriously burned; died on the [illegible]
32	May 2.	Dominion No 3	Walter Lean	20	Landing tender	Leg broken; run over by empty box.
34	May 8.	Caledonia........	William McKay	24	Shot firer	Leg fractured by fall of loose coal.
35	May 14.	International	John McNeil.	27	Labourer	[illegible] broken, caught between [illegible]
36	June 12.	Caledonia	John Ryan	60	Stableman	Backbone broken by piece of stone [illegible]
37	June 20.	Dominion No. 2.	John M. Blue	25	Loader	Killed; caught under [illegible]
38	June 28.	Reserve	Daniel J. McNeil. ...	31	Shot firer .	Leg broken by piece of coal from face.
39	July 3.	Dominion No. 3	Anthony Mugford ..	44	Landing tender	Injured across hips; caught between box and pillar.
40	July [illegible].	Dominion No. 2	Frank Baird	22	Driver	Injured across back; caught between box and boom.
41	July [illegible].	" "	[illegible] Young	50	Labourer	Leg broken; jammed between box and door.
42	Aug. [illegible].	Reserve	[illegible]	71	Loader...........	Leg broken by piece of coal from face.
43	Aug. [illegible].	Caledonia	Peter [illegible]	60	Miner	Arm broken by piece of roof coal.

Accidents in Cape Breton Coal Mines, Southern District, During Year Ended September 30th, 1903, (Continued)

No.	Date.	Mine.	Name.	Age.	Occupation.	Remarks.
44	Aug. 25.	Caledonia	Albert Boutilier	30	"	Jaw broken; struck by a runaway box.
45	Sept. 3.	Dominion No. 2.	Lauchlin McDonald	29	Sinker	Killed by hoisting bucket falling on him.
46	"	" "	Elijah Bennett	33	"	Fatally injured; died one hour after.
47	"	" "	James Bradbury	47	"	Leg broken; struck by falling bucket.
48	Sept. 22.	" "	George Butcher	24	Loader	Leg broken by piece of coal from face.
49	Sept. 23.	" "	Hector McDonald	28	Brakeman	Leg broken; caught between air locomotive and prop.
50	Sept. 26.	" "	John A. Rickets	50	Shot firer	Killed by fall of coal.

GOLD.

The production during the year 1903 amounted to 25,198 ounces compared with 28,279 ounces during the year 1902.

It is hoped that the investigations of Mr. Faribault, of the Canadian Geological Survey, and the deductions therefrom set forth in his report to the Government of Nova Scotia on deep gold mining in this province, will prove a guide to developments that will greatly augment the production of our gold field.

I append the report of Mr. Weatherbe's visits to the mines in operation during the year.

REPORT ON THE GOLD MINES OF THE PROVINCE.

FROM SEPTEMBER, 1902, TO SEPTEMBER, 1903.

To DR. E. GILPIN,
Deputy Commissioner and Inspector of Mines,

SIR,--In presenting the attached report on the annual inspection of the gold mines, I submit the following notes for your consideration :

EXPLOSIVES.

Of recent years many accidents of a serious nature and often with fatal results have occurred in our mines through the use, or as it might aptly be said through the misuse, of dynamite. Several of the worst of these have been due either to the improper construction and care of thawing houses, or to the methods used in thawing.

A significant fact in connection with the above is that, in many instances, the victims have been men above the average in intelligence, and used for long years to the handling of this treacherous explosive.

During the past season I saw a case at a mine where a quantity of dynamite was being thawed on top of a barrel within a few feet of a hot boiler, and close to the manhole and hoistway of the shaft.

Again, while employed underground in one of our largest mines, at four separate times during a fortnight, I found loose pieces of dynamite cartridges lying in unused stopes and levels. This was probably due to carelessness of the loaders.

At some of the, otherwise, best equipped mines in the province the thawing houses are poorly constructed, have unsafe or inadequate means of thawing, are too close to the shaft and other mine buildings and are often literally soaked inside with nitro-glycerine

Many rules have been laid down for dynamite, which hold good in every case except one in perhaps a thousand, but there is always the possibility of this thousandth chance upsetting all calculations. Men who spent their lives about dynamite have been killed by its apparently inexplicable action. It has been found by experiment that dynamite freezes at fortyfive degrees and explodes at 360 degrees Fahrenheit. It is supposed to be absolutely harmless when frozen. But these rules have some notable exceptions. Dynamite has been known to explode when apparently frozen, and with terrible results. It can only be supposed that some part of it was not frozen or that frozen dynamite has some mysterious properties not yet understood.

Under ordinary conditions dynamite will burn as readily as sugar. It gives off a reddish flame when ignited. At other times a flame will explode it; no one understands exactly why. The same mystery surrounds the effect of concussion. Even a violent jarring will not explode dynamite once in a hundred times. Tons of it have gone through railroad collisions without exploding, when the car carrying it had been completely demolished.

Cartridges have been dropped from the roofs of ten story buildings or have been hammered like putty without result. Then again, a slight shock has set off cartridges which had been packed with the greatest care.

It is popularly supposed that, because dynamite explodes at a temperature of about 360 degrees F. when heated at a moderate rate, it may be burned with impunity; but it is forgotten that when burning, the mixture becomes heated above its exploding temperature in a short time, and may explode with violence.

The following extracts from the Manual, issued by the Ontario Bureau of Mines, may be read with interest, and if the recommendations are followed, their publication may be of some service:—

"It would seem almost unnecessary to warn intelligent beings against the perils of warming dynamite over an open fire, of carrying it in their boot-legs, of throwing pieces of dynamite cartridges into out-of-the-way corners of a mine where they may afterwards be discovered with painful results; nor would it seem needful to point out the terrible disaster that may follow from biting a cap on to a fuse. But these and equally reckless practices are of daily occurrence at mines and on railroads, entailing risk of life not only to those who themselves are guilty of such criminal carelessness, but, what is worse, to innocent parties."

NITRO-GLYCERINE.

Nitro-glycerine is a nitric ether, or specifically a glyceryl tri-nitrate. Different degrees of nitration yield the mono,- di,- and tri-nitroglycerine, respectively, the latter being the nitro-glycerine of commerce, having the chemical formula $C_8H_5O_3(NO_2)_3$. It is made by treating an exceedingly pure quality of glycerine with a mixture of nitric and sulphuric acids, the proportions commonly adopted being 3 parts of nitric acid, 5 parts of sulphuric acid, and from 1 to 1.15 parts of glycerine. The glycerine is added very slowly, and with constant stirring. The agitation of the mixture is now usually accomplished by compressed air.

Properties of nitro-glycerine. When made from the purest ingredients nitro-glycerine is an oily-looking fluid, as clear and transparent as water. When freshly made it is whitish and opaque, but on standing it clears. As usually made it has a yellowish tint, but the best makers at the present day turn out a nearly water-white product. The specific gravity of nitro-glycerine at ordinary temperatures is 1.6 which increases when frozen to 1.735, showing that it contracts 10-21 of its volume in freezing.

Nitroglycerine dissolves in alcohol, ether, methyl alcohol, benzine, etc., but is nearly insoluble in water (about .003 per cent.) Freshly made opaque nitroglycerine freezes at from 2.2° to 7.6° F. while the transparent or " cleared " product freezes at from 39.2° F. to 37.4° F. In a frozen state nitroglycerine is less sensitive to shock or concussion than when liquid, but on breaking frozen crystals a peculiar molecular change occurs from which explosions result. It may be completely evaporated at a temperature of 158° F., and dynamite will lose 10 per cent. of its nitroglycerine if exposed for several days to a temperature of 101° F. It is claimed to slowly volatilize at normal temperatures above its freezing point. Its ignition temperature, or more properly, firing point, is 356° F. Exposed to a temperature of 365.7. it boils with the evolution of vapors. At 381.2° F. it volatilizes slowly. At 392 it evaporates rapidly. At 422.6 F. it detonates violently. From this point its behavior changes, passing through temperatures at which it explodes with constantly lessening violence, until at a dark cherry red heat, it merely assumes the spheroidal state and fails to explode. This is true for small quantities only. When gradually heated it is certain to explode at 356 F. If other nitrous compounds are present, due to faulty glycerine or faulty washing, nitroglycerine will explode at lower temperatures.

Nitroglycerine is rapidly decomposed, by yellow ammonium sulphide, and other alkaline sulphides, with the separation of sulphur. It is slowly decomposed by an alcoholic solution of potassium hydrate, by ammonia, carbonate of soda,(sal soda) and other alkaline carbonates, by hydrogen-sodium phosphate, hot water, ferrous chloride, and sulphuric acid. All acids cause its decomposition, and traces of acids remaining in it from its manufacture lead to detorioration; hence the importance of an absolutely acid-free nitroglycerine. Any acidity may be detected by litmus paper (turning blue litmus paper red). For its safe decomposition by inexperienced persons a strong solution in water of sodium carbonate (sal soda) is best. The decomposition is slow and unattended by danger. Gentle stirring with a wooden paddle will facilitate the reaction.

The action of the direct rays of sunlight is known to cause the decomposition of nitroglycerine, and may provoke an explosion. When decomposition sets in, it usually, but not always, proceeds in a tranquil manner, disengaging nitrous fumes which color the nitroglycerine green, then developing nitrogen and carbon dioxide (carbonic acid) and crystals of oxalic acid, water, and ammonia. But decomposition is not always so quietly accomplished, especially if the temperature is high, as when heated by the sun. It is not to be trusted. If treated to a temperature of 212° F. for a few hours it decomposes. In small quantities nitroglycerine will burn quietly, but with large quantities the heat thus generated will bring the entire mass to the explosion temperature before it has burned away. The critical temperature for nitroglycerine lies between 113 degs. F. and 122 degs. F., and its sensitiveness is greatest just above the freezing point.

Pure nitroglycerine is not sensitive to friction or moderate percussion, except where pinched between metallic surfaces. A quantity of it has been thrown up by means of a rocket to a height of 1,000 feet, from which it fell without being exploded by the impact. When impure or in a state of decomposition, however, it is exceedingly sensitive and explodes violently on shock, even when unconfined. The best nitroglycerine, when confined, is liable to explosion by shock.

Nitroglycerine taken internally, except in minute medicinal doses, behaves as an active poison.

DYNAMITE.

Dynamite is the most largely used of any blasting material in the world. It was invented in 1866 by Alfred Nobel. The principle consisted in using an absorbent, commonly called a "dope", which would take up the nitro-glycerine and hold it somewhat after the manner of a sponge. A suitable dope should possess a cellular structure, so that the nitro-glycerine may be sub-divided into minute globules, each globule held separately, in its own cell, completely isolated from every other. In this condition its sensitiveness is greatly reduced, depending, of course, upon the amount of nitroglycerine absorbed. Dynamites may be classed according to the nature of the absorbent used.

The original dynamite of Nobel consisted of nitro-glycerine absorbed in kieselguhr, or diatomaceous earth. This material consists of the siliceous remains of microscopic cells and capillary tubes, within which, when the nitro-glycerine is once absorbed, it is tenaciously held. The nitro-glycerine is thus cushioned against the effects of sudden shocks, and will normally explode only under the powerful impulse of a detonator. The kieselguhr is cleansed and calcined with great c and will then take up 75 per cent. of nitroglycerine. According as the percentage of nitroglycerine is reduced the dynamite becomes less sensitive, and at 40 per cent., it requires a powerful detonator to insure explosion. Magnesium carbonate, though a valuable absorbent, will not hold the nitroglycerine as effectively as kieselguhr. It is used to some extent as a mixture in other dopes. Kieselguhr dynamite is the typical dynamite, but it is not made in America, since other less expensive dopes are available, which under proper conditions afford an almost equal degree of security.

Wood pulps vary considerably in the amount of nitroglycerine they will absorb, ranging from about 60 per cent. to 85 per cent. Before introducing the nitroglycerine it should be thoroughly dried, on no account being allowed to retain more than 1 per cent. of moisture. Nothing is more certain to cause deterioration of dynamite, with "leaking" of the nitroglycerine, than moisture, and dynamite so deteriorated is exceedingly dangerous and should not be used.

There are certain requirements which all dynamites should fulfill, and it is the duty of all persons using or handling them to see that they do not fall short of the proper standard. Good dynamite should not feel greasy. There should be no trace of free nitroglycerine inside the wrapper of the cartridge. In order to test this point lay one of the suspected cartridges on a sheet of clean brown paper in a room at from 60 to 80 deg. F. for a period of about 12 hours. If the cartridge has begun to "leak" nitroglycerine, this will be shown by an oily discoloration on the brown paper. Dynamite properly made should be proof against leakiness under normal conditions of temperature and moisture. To test its quality in this respect two separate determinations should be made. First, freeze and thaw samples of the dynamite three successive times, and test for leakiness as explained above. Second, expose samples to a temperature between 85 and 90 deg. F. for six consecutivs days and nights, and again test for leakiness. In neither case should any trace of free nitroglycerine be seen on the brown paper. If slowly heated dynamite explodes at 356 deg. F., and if rapidly heated it explodes at 416 deg. F. These temperatures apply only to kieselguhr dynamite. The American dynamites containing woodpulp and nitrates will explode at somewhat lower temperatures. Like nitro-glycerine, it is most sensitive to shock or friction just above its freezing point.

According to the character of dope used, it freezes at from 42 degs. F. to 46 degs. F. It is nearly if not quite insensitive to shock when frozen, but not entirely so to friction. Cartridges broken while frozen are liable to explosion from molecular disturbance of the nitroglycerine crystals. Ramming frozen sticks into a hole is attended with the same danger. Explosion of frozen dynamite may be due to long crystals of nitroglycerine with films of unfrozen nitroglycerine, exploded by friction. Frozen dynamite is not incapable of being detonated, especially if very powerful detonators be used. Any efflorescence, whitish film, or incrustation on dynamite catridges indicates either that the dynamite itself contained an excess of moisture in the dope, or (what is most likely to be the cause) that it has been subjected to excess of dampness in transportation or storage. In either case the incrustation is due to the dissolving out of the nitrate of soda or potash from the dynamite. This has consequently destroyed its homogeneity, and such dynamite is almost always leaky, or will soon become so It is unreliable, may fail to explode in blasting, and will produce noxious fumes if it does explode. Its power as an explosive has been reduced also, so that it possesses the disadvantages of being dangerous to handle, unreliable as a blasting agent, and at best uneconomical. It should not be used, but should be destroyed. Exposure to the rays of the sun, especially if transmitted through window glass, is liable to produce decomposition and explosion. A strong electric discharge or a flash of lightning will usually explode dynamite. Dynamite placed in water gradually parts with its nitroglycerine, its place in the cartridge being taken by the water.

Attention is specially drawn to this fact because of the popular impression that dynamite is unaffected by water, an error that has probably arisen from the fact that it can be used in wet holes or under water. In wet situations it should be fired within a reasonable time after preparing the charge, and under no circumstances allowed to remain unexploded for a period of many hours; otherwise nitroglycerine will leak out and find its way into crevices, where it may cause accidents later on. The characteristics given above apply to all those explosives known popularly as dynamite, giant powder, dualin, atlas powder, hercules powder, rendrock, etc.

STORAGE.

Local conditions have much to do with the type of structure to be built for an explosives magazine. In general it may be said, the lighter the construction the better. Thus the radius of danger is reduced to a minimum. The only points in favor of more solid construction are safety from fire and from burglars. In America this precaution is of little moment, so that in open country, where a sufficient zone can be obtained free from inflammable materials, the light construction is preferable.

Storage in caves, tunnels, earth or stone covered vaults and in log structures should under no circumstances be tolerated. The chief objection in all these cases is that the structure will hold dampness, and any dampness in a magazine containing any explosive into which nitrates enter as an essential or accessory ingredient is certain to affect its quality and render it more or less dangerous in subsequent use. This applies to gunpowder, (common black powder) and to practically all dynamites, especially those made in America.

A suitable building is one made of common weather-boarding on a framework of 2 by 4 inch stuff, with a tight flooring of tongued and grooved boards, blind nailed, and with walls and ceiling sealed with the same material. The roof should be of tarred paper. Where danger of fire is apprehended the lightest steel shingles may be used on the roof and outer walls. The door should be heavy and should in all cases open outwards. Openings for ventilation should be provided around the bottom, protected by wire screens or otherwise against the entrance of vermin, and so constructed that water cannot enter.

Considerable difference of opinion has existed regarding the danger from lightning. The Swiss Committee on the physical properties of dynamite (1870) reported that " thunderstorms and lightning involve no special danger to dynamite. But if well confined, and if the temperature produced by the lightning be high enough, an explosion may possibly take place." Prof. Munroe severely criticises neglect of lightning protection, and suggests that " a network of metal rods carried over the tops of those magazines whose roofs are slated, and given a sufficient ground connection, would be a complete protection."

Greater safety may be obtained by either so placing a magazine that a hill or rise of ground is interposed between it and adjoining objects that may suffer from an explosion. If this is not possible a mound of earth or sand from 12 to 15 feet high, with its base 20 feet from the magazine, will deflect the force of the explosion upwards and will materially shorten the radius of danger in that direction.

Dynamite should be stored in tiers, box on box, with battens or lath between the successive layers of boxes to insure good ventilation and to lessen the danger from friction.

Gunpowder in unopened cases, dynamite in unopened boxes, and fuse securely boxed, may be stored together in the same magazine, but no fulminates in the form of caps or otherwise, or loose coils of fuse should be stored in the same building with gunpowder and high explosives.

The building must be kept scrupulously clean, and men with nails exposed on the soles or heels of their boots should not enter or work in any magazine. No fire should be permitted in or about such a structure, and smoking is not to be tolerated in the vicinity of explosives.

It is advised by those having most experience in the storage of explosives that gunpowder kegs should be rolled over once every two or three weeks to prevent caking, and that cases of dynamite should be turned over once every two weeks.

According to Mr. G. G. Turner, one of the most experienced men in practical blasting operations in America, this is an economy, because it tends to keep the dynamite homogeneous in composition, so that it detonates better. This is not necessary while the dynamite remains frozen.

No keg of gunpowder or box containing any other explosive should ever be opened in the magazine. This may be allowed only in small buildings kept for this purpose, where a limited supply for immediate use is maintained. In such a building not over 200 pounds of any form of explosive should be kept at a time.

In the case of dynamites it is best to unpack the total quantity at once, wipe off the sawdust, lay the catridges on their sides upon planed board shelves, and then carefully remove all fragments of the original boxes and sawdust, which should be burned in the open. Such sawdust usually contains more or less nitroglycerine, unless the dynamite is in unusually perfect condition. Any oily stain on the cases indicates that nitroglycerine had leaked from the catridges. The shelves must also be frequently inspected, and if any oily stain is observed, no matter how minute, it must be thoroughly washed with a saturated solution in water of ordinary carbonate of soda (sal soda, or "washing soda"). This destroys the nitoglycerine. The floor of this building should also be washed occasionally with such a solution. No fire of any kind should ever be permitted in this structure, but it may be warmed by steam pipes, provided they are so placed that no explosive may ever come into direct contact with them.

The taking of unopened boxes of dynamite into a mine is a most reprehensible practice, since proper cleanliness and the removal of the sawdust and fragments of the boxes is not as easy as it is from buildings above ground. Only dynamite cartridges from which the sawdust has been wiped and placed in clean boxes should be sent below.

It is always advisable on receiving a fresh consignment of such explosives to make an inspection to ascertain that it is in good order. The opening of one box or keg out of every ten will usually suffice to detect any serious deficiency. If not in good condition the manufacturers should be notified at once. If faulty, it should then not be returned (for its shipment under such circumstances, especially in the case of nitroglycerine powders, is dangerous) but should be destroyed. For this purpose select a sufficiently isolated situation and lay the dynamite cartridges on the ground end to end in a line or very open spiral. Pour parafine oil over the entire train, or if this is not available, use kerosene, and ignite one end of the train with an ordinary fuse (of course not using a cap). It will burn quietly and safely.

Fuse in open coils should be stored separate from all other explosives, as should also caps, detonators or exploders. They should be kept in a dry place, where there is freedom from fire or high temperatures.

THAWING DYNAMITE.

Dynamite should not be thawed by direct heat from a fire or a stove. There is also more or less peril of producing leakiness and starting decomposition by thawing it in the sun. There is peculiar peril from thawing it in the sun when the rays are transmitted through window glass as imperfections in the glass are apt to focus the heat at certain points.

There are only two safe ways of thawing dynamite, viz.: in a room heated by steam pipes, in which case the explosive must never be laid on the pipes, and in a vessel surrounded by warm water. The proper temperature of the water is 125 deg. F., which is approximately the temperature at which the bare hand can just be held without pain. The water should be heated separately and poured into the water-space in the thawer, and the thawer should not be heated over a stove or other source of heat. The best material to use in making a thawer is sheet zinc, though the best grades of galvanized iron will do. All seams should be absolutely smooth, so as to leave no crevices for the lodgment of dirt and nitroglycerine.

In using any form of thawer the cartridges should be free from sawdust, and the vessel or tubes holding them should be kept scrupulously clean. The only way to make sure of maintaining a proper freedom from accumulations of nitroglycerine in the thawer is to wash it out after each thawing with a strong solution of carbonate of soda (sal soda or washing soda) which is best applied warm.

Dynamite is never properly thawed while it feels lumpy at any part of the cartridge. It should be uniformly pliable throughout. Its use when but partially thawed is attended with danger in loading, and its detonation will be imperfect, with the consequent disadvantages of yielding a less powerful effect and giving off noxious fumes.

HOISTING.

Though happily fewer serious accidents have occurred through negligence in this branch of the work than in the actual extraction of mineral, it is probably due to the ropes, drums, wheels, cages, and tubs, etc., being easily looked after, and to the fact that few of our deeper shafts are vertical, the strain thus being reduced by the friction of the rails or slides.

A few suggestions, however, may not be out of place: Special attention should be paid to a new rope for the first few weeks, as during that time wires are apt to break, through change in position or inefficiency. Ropes should not be used when several wires are broken in the same place. They should be constantly oiled or dressed to prevent rust, and should be examined systematically. A very good preparation for dressing steel ropes is made by mixing one barrel of coal tar or pitch tar with one bushel of slack lime and boiling well. The rope can then be passed through a trough containing this mixture. The pulley wheel should be of large diameter and should generally be blocked or in any case not worn rough. Care should be taken in "aligning" the pulley wheel and drum to prevent extra friction and wear of rope.

In Queensland the Act provides that every rope or chain before being used must be equal to carrying not less than 1½ times the weight of the ordinary load, including cage, loaded truck or car and weight of rope from shaft bottom to pulley wheel.

The selection of a rope and the relation of its diameter to the diameter of pulley wheel is a more important matter than is usually considered, not only with regard to safety, but as affects economy.

The best crucible cast steel rope with six strands containing nineteen wires in each, and with a hemp centre, is an excellent rope for hoisting.

An efficient test for a steel rope is performed in the following manner: Take a wire, say four inches long; place it in the vice, and bend it to a right angle so as to give more surface bearing to hold it firmly during the test; make one leg one inch long, and the other three inches long. Now fix the angle of the bend and the short leg very firmly in the end of the vice; then take a pair of tongs and apply them to the projecting piece, which is three inches long leaving 2½ inches clear for twisting between the end of the anvil and the tongs. Note the number of revolutions the wire will twist before breaking, treat each wire alike, especially as regards the 2½ inches to be tested.

PLANS.

Attention was drawn in my last annual report to the necessity for having plans and information regarding the underground workings recorded in the Mines Department. On the attempt being made to enforce the statute in this respect, a ready acquiescence was shown by the various managers to fall in with the scheme, and during the year plans of some twenty mines were filed in this office. An example was given in the same report of a case where plans of the underground workings would, if kept, have saved expense. Since then a more startling case has occurred in which the largest producing mine in the province was totally lost by caving, and no official record of the extent of its workings has been preserved. This is in one of the most important districts, and new developments which are expected to be on a large scale have been commenced immediately below these old openings.

It is true that a number of the plans returned were crude, and in some cases they probably contained inaccuracies; but the fact of obtaining and recording *any* information of value in this line is a step in the right direction.

It is surprising, however, what meagre particulars are kept by the Companies themselves, even at the largest mines.

At very little extra expense, information might be daily placed in the Companies' offices which would, in many cases, give an accurate key to the most economical methods in future development work, and place in the hands of the investor or student an absolutely true and graphic history of the mine.

A very simple suggestion, which, if necessary, could easily be elaborated upon by notes, etc., is as follows:—

Let the foreman carefully measure the thickness of the ore deposit, or the portion of it milled, at say every five feet gained in the levels, shafts, winzes and raises, as well as in the stopes. These figures could be placed regularly on the large working plan in *blue*. The values of the ore—taken from the regular mill run—could be put on the same plan and at the same points in another color, say *red*. Very often it would be found that the pay shoots follow regular and parallel zones, and that the values conform to certain thicknesses or characters of ore. Without this information these facts are imperfectly known, or in fact not recognized at all.

I would again respectfully suggest the enacting of some more definite regulations regarding the use, handling and storage of explosives.

ISAAC'S HARBOR.

DOLLIVER MOUNTAIN MINING AND MILLING COMPANY.

G. J. Partington, Manager; G. E. Francklyn, assistant, and Daniel **McAskill, foreman.** About 90 men are employed.

Last autumn a series of accidents to the dams, sluices and water wheel necessitated repairs. These have been completed during the year, and the necessary horse power has been transmitted electrically to the shaft-house and engine room. In the latter an electric hoist, a 130 H. P. motor and half a "15 drill" Rand Compressor supply the power direct for hoisting, pumping and drilling. Four machine drills and two air pumps are used. In the shaft house, which has also been completed during the past year, a 60 H. P. motor runs the large size Gates rock breaker, and with its surplus power will supply a machine shop to be erected just north of the shaft house.

At present, cylindrical steel tubs are used for hoisting, and are tipped by an ingenious device consisting of hook and rope specially arranged. When a depth of 500 feet has been reached, a tipping cage, to be built by I. Matheson & Co., will replace the tubs.

The shaft house is connected with the mill by a trolley way some 1,200 feet long and sloping up to the mill. Unfortunately, this track could not be arranged with a down grade to the mill, owing to quicksand, and the necessity for a good tailing dump preventing its being placed otherwise.

The building has been completed with foundations for 80 stamps. Forty stamps are already in place, and have been crushing since June.

Four Wilfley concentrating tables are in position below the plates.

Automatic ore feeders of the Challenge pattern are used, and commodious ore bins provide for a supply being kept on hand.

Most of the milling machinery is made by the Allis-Chalmers Co. The power in the mill is supplied by two motors, one of 85 H. P. for the stamps and feeders and a smaller machine for the concentrators.

A 50 H. P. motor in a separate power house outside the mill building runs the endless cable-way for the ore trucks from shaft to mill.

The magazine is situated some distance from all buildings and is lighted and warmed by two banks of incandescent lamps. A lightning arrester is placed outside to provide against accident.

UNDERGROUND DEVELOPMENT.

The vertical shaft measuring 17 feet 6 inches by about 5 feet inside timbers had reached a depth of 265 feet.

A station was cut on the "Partington" belt and rails laid at 159 feet from the deck. This station measures 12 feet by 22 feet 9 inches, and a pillar 25 feet thick has been left round the shaft, which was sunk exactly on the anticlinal axis. The plane of this axis is, however, pitching south, and the shaft eventually will intersect the north "legs" of the successive veins.

Levels from this station have been carried back on the legs of the belt 200 feet on the south leg, and 150 feet on the north side of the anticlinal.

An air shaft has been sunk for 60 feet on the south leg and is situated 450 feet west of the main shaft. Connection will be made shortly with this from the level now driving. The belt contains between 5 feet and 6 feet of milling stuff at the faces, and the plan is to take out the ore over the dome for 100 feet from the shaft and to leave the "crown" in place, from there westerly, as a support. It will be necessary to support the above excavation with heavy timbering.

In the meantime the shaft which is now 265 feet deep, has gone through the 22 foot belt, and has just tapped the "Forge" belt on which, when a station has been cut, levels will be driven back on the legs in each case, as on the Partington Belt, and a cross cut will be made north and south to cut the legs of the two overlying belts for second lift on each.

A regular system of pillars is to be left throughout the workings.

The Boston-Richardson Mining Co.

C. W. Donohoe, Manager; John Thornham, underground foreman, and 40 men employed.

This Company took over the property from the Richardson Company in May of the present year, negotiations having been carried on between them for some months.

In March the workings were completely lost by an extensive crush which demolished the main east shaft. This was caused by the tremendous swinging weight of the practically unsupported roof closing in on the foot wall. Fortunately the men, at the time of the accident, were in the lower workings, and partially protected by the pillars in those levels, which the Department, during recent years, have insisted on being left. They therefore had a means of exit up the steep north shaft, which, though remaining nearly intact at that time, is now probably in a somewhat similar, though modified position to that in which the main east shaft was, immediately before the accident.

In June I explored these workings so far as the water would permit, and found their passage extremely precarious. The fractures extended round to the north leg, and one of the lower pillars on the west side of the north shaft I noticed to be badly cracked underneath.

There can be no doubt that the cave-in and consequent loss of money, and employment to a large number of families was directly due to negligence for a period covering a number of years.

Even though the necessary pillars were not left in the mine, it is possible that the main shaft might have been saved if, after the severe crush on the south leg in 1900, the precautions had been taken, as directed, of placing continuous and heavy false pillar work along the south side of the shaft and square set timbering under the roof.

The new management are enlarging and sinking the vertical shaft commenced by the Richardson Company. This is to be 19 feet by 6 feet and will be divided into three compartments, two for cages and the third for pumps and ladderway.

This shaft is situated 850 feet from the old shaft house and about 60 feet southerly from the line of the old shaft. It is expected that the vein will be tapped at a vertical depth of about 450 feet, andat not a great distance below the old workings.

The old shaft house and other buildings have been removed and what is considered the danger area on the surface over the workings, where several signs of caving are manifested, has been fenced.

There is some talk of replacing the mill with a new one.

COCHRANE HILL.

J. B. Neily.—Geo. F. McNaughton is opening up the old Cochrane Hill Gold Mining Company's property for J. B. Neily, to whom it was transferred.

WINE HARBOR,

Plough Lead Mining Co—M. McGrath, Manager; C. N. Robar, Foreman. Twenty-three men employed.

No changes have been made during the year on the surface or in the plant. The east shaft is now 215 feet deep. The ore shoot has been followed some 86 feet east of this shaft, and the ore is taken out by the underhand method, hand steel being employed in the operation. The deposit continues on its pitch to the east and its dip to the south. A pillar 10 feet by 20 feet is left at a distance of 20 feet east of the shaft and at a depth of about 180 feet from surface.

Old Provincial Mining Co.—S R. Heakes, Manager; Geo. Hirschfield Foreman. The shaft sunk for the Plough Lead has been deepened to 350 feet. At the west end of the 300 feet level, so-called, (which is really 281 feet from deck,) and 50 feet from the shaft, the cross-cut north was discontinued at 65 feet, and another tunnel was carried south 80 feet. Neither of these, however, intersected the belt.

At the bottom a cross-cut south struck what is supposed to be the continuation of the "Plough Belt" at 21 feet from shaft, and drifts are being carried on it east and west. These are now about 50 feet each way from the cross-cut. About 21 inches of quartz is showing in the faces on this drift.

The cross-cut was also driven about 27 feet north of the shaft. At the bottom of these works a Cornish 6 inch pnmp with 3 foot stroke lifts to the 300 feet level where a Northey 4 x 6 x 7 handles the water to the surface.

At the "Caledonia" works the shaft is now 210 feet deep and a level has been driven on the belt which is 8 feet wide and is said to contain 7 feet of crushing material. The level is now 50 feet west of the shaft and 80 feet east, where it is connected with the old incline by a short cross-cut south. This work was effected by driving back from this incline and raising to meet the shaft.

At 20 feet east of the shaft a cross-cut has been driven from this level 20 feet south and 30 feet north. As the shaft is now considerably below all old workings the plan is to sink and after gaining a lift below the present bottom-level to remove the ore in sight by the underhand method.

The shaft is being enlarged to 18 feet by 8 feet. Two Northey pumps are used, one 4x6x7 and the other 4½x2¾x4.

Plant.—In the engine house a 100 H. P. boiler supplies steam for a 100 H. P. generator. This runs a 20 H. P. motor, two electric drills, Sturtevant fan, and lights at the Plough Lead works. The boiler also supplies an Ingersoll Compressor running two drills at the Caledonia works, a feedwater pump and heater, and the 15 stamps and Wilfley concentrator in the mill building.

The Napier Property.—Exploitation on this property during the year, under the direction of L. W. Getchell, has proceeded and about 230 oz. of gold have been produced, from these test crushings.

GOLDENVILLE.

Bluenose Gold Mining Co.—About 50 men are employed at this progressive mine, under the management of Arthur G. McNaughton. tephen Monk still retains his position as foreman, underground.

The plant has been augmented by a new boiler, but otherwise remains the same.

Five Sullivan drills are employed on both shifts.

Development during the year comprises the following work :—The main shaft on the Springfield belt has been deepened by an additional 105 feet, making a total depth from sill of 470 feet, and another cross-cut (No. 3) has been carried from here across the measures, northerly to the McNaughton belt. The main shaft is to be deepened for a sump, and a bin is to be put in at the cross-cut level. A small pump is installed in this new sinking. A level has been driven on this belt at the face of cross-cut, 70 feet west and 13 feet east, and connection made with the next level above. A small block of ore was removed at the bottom of this winze on the west side.

The 360 foot level has been extended 130 feet west and 120 feet east, giving a total length of 738 feet.

The ore has been taken out from the west face in a series of back stopes up to the 270 feet level, at a distance from its west face of 100 feet.

East of the cross-cut the 360 feet level is now in 300 feet, and the ore has been stoped from a point within 30 feet of its face up to the next level. A 30 feet raise has been driven at the face.

The 280 feet level has been driven westerly for an additional 60 feet. It is now 278 feet west of the cross-cut.

The belt is said to supply about 36 inches of "crushing," and in places the quartz in this amounts to about 24 inches.

Wentworth Workings. The same company are opening up these old workings. The shaft on the Wentworth Belt has been remodelled and is 100 feet deep. The ore has been taken out above the west bottom level for a height of 30 feet and to a distance of 100 feet from the shaft. A cross-cut here follows a break southwesterly for 35 feet where the belt is again encountered and some old workings connect with a shaft a short distance from the cross-cut. On the east side the ore was worked out by former operators to the surface by underhand stoping from a point near the shaft bottom. The main lead in this belt measures from 14 inches to 20 inches.

The present plan is to sink and drive east under the old workings to catch a rich roll supposed to crop to the eastward, and pitching westerly. This roll is on a vein in the south side of the belt. A cross-cut from the shaft bottom connects with the Warren lead over 100 feet to the north, and a raise was made to an old shaft on this lead situated close to the road.

Palmerston Belt. In the report on this district in the last annual Mines Report will be found a note referring to the intention of Mr. Geo. W. Stuart to sink a shaft to exploit the ground to the west of area 743. During the season the following work in this connection has been accomplished: A shaft 14½ feet by 4½ feet has been sunk for 120 feet and is still in process of sinking, This is close timbered. But below this depth setts are to be put in every five feet and boarded. The shaft is divided into three compartments: a skip-way, tub-way for sinking and baling, and a ladder and pump compartment.

When 160 feet has been reached the intention is to cross-cut south and drift on other belts as well as on the Palmerston Belt. A 7 inch lead, well mineralized, shows in the present shaft-bottom.

(Since the above examination was made, it is reported that the cross-cut mentioned has been driven and a large belt of rich quartz struck.)

A commodious shaft-house, engine and boiler-room is built, all contained under one roof over the shaft.

A well planned deck head, with ore and rock shoots and bins, is also contained in the building. A tank in the wall of shaft at 55 feet is emptied by a Cornish pump.

The remaining plant consists of two 60 horse power boilers, one 50 horse power double drum hoist, and a 60 horse power engine, which will supply power for the Blake rock-breaker, pump, and dynamo yet to be installed.

A large duplex Rand compressor of a new design was being placed in position at the time of my visit.

John Lawson is underground manager here, and has 17 men employed in three 8 hour shifts.

ROYAL OAK MINING CO.

On the Jumbo lead the shaft has been sunk an additional 120 feet, making it 320 feet deep, measured on the dip. A drift has been made 30 feet west at the bottom, and from it a cross-cut was driven north to the Hayden lead.

The 200 foot level was extended east 58 feet, and at the face of the part of this level a cross-cut connected with the Hayden Lead.

In the 100 foot level a cross-cut connects with the Hayden, and two small blocks of ore have been removed below the level, and a block between the 100 foot level and the 40 foot level has been removed on the west side.

On the Hayden Lead the work has been confined to a depth below the level of the old works.

The shaft has been sunk from 130 feet to 200 feet. This level has been driven 190 feet west, and 90 feet east, and on the west side stoping has been extended from the face up to the old workings,

Near the east face of this level a small block of ore was removed and a raise carried up to some stoping, from which place connection is had by a cross-cut to the Jumbo lead. Below the west 200 ft. level a block has been taken out, measuring 20 feet in depth by about 50 feet in length, and connection was made by sinking and raising with the cross-cut from the 320 ft. level, on the Jumbo lead.

Work is still being prosecuted in a prospecting manner by the aid of "whims" on the "McKenzie" and another belt to the north.

Ten stamps have been added to the mill.

A new 80 H. P. boiler has also been installed, and the old boiler in the mill building has been removed to the "Jumbo" lead shaft-house.

A Rand air compressor for 7 drills (steam chamber 10x12 and air chamber 12x16 L. P.) has also been placed at the shaft.

Four Rand machines and a Sullivan drill are used in both shifts (10 hours each.)

Gardner McKenzie is still in charge with J. McGrath as assistant. There are 25 men on surface and in the mine.

W. J. McIntosh is general manager.

Eoum Secum.

G. H. Gillespie, Manager.

C. Drillio, foreman, and 13 men employed.

The work during the year consisted in sinking the vertical shaft, 44 feet below the cross-cut, (giving it a total depth of 165 feet from surface,) and driving a level on the Galena belt at the cross-cut level, or

120 feet from the surface. This level was driven 270 feet east of the cross-cut and 310 feet west, and raises were commenced for stoping, on each side. A cross-cut near the east face was driven north to the "Incline" belt, 24 feet.

The "Galena" vein varies in thickness from 2 inches to 5 inches in quartz.

At 75 feet from the surface in the incline a drift is in west, 100 feet on the "Incline" belt, and the drift on this belt at the cross-cut level is in east, 280 feet.

The workable shoot on this "Incline" belt contains about 2 feet 6 inches of quartz, with some slate, also said to be milling.

The shaft is still in process of sinking.

The plant in the new engine room, now completed, includes a 100 horse power Matheson tubular boiler, a double drum "Flory" Hoist, and a Rand air compressor (12x18) capable of running 8 drills.

HARRIGAN COVE.

Kent Archibald's Property.—Munro Archibald, manager; J. A. Fraser, foreman; 17 men employed.

In the old workings north of the mill little work has been done. A prospecting cross-cut is being driven south from face of the west level.

In the new work commenced last year the west shaft is now 70 feet deep, and the other shaft, 83 feet to the east, is 110 feet from surface.

The method of removing the ore is by underhand stoping. A block west of west shaft is out for distance of 80 feet. The new vein has also been stoped from the bottom of the east shaft to a point in the west shaft 50 feet from the surface.

On the east side of the east shaft stoping has been carried from the bottom to a height of 50 feet, and at a distance of 50 feet from the shaft.

A small boiler and engine runs a Cornish pump, situated in the west shaft to which point the water is lifted from the lowest workings by aninjector. A new boiler is being put in place to run this pump and a steam drill.

Hoisting is effected from the east shaft by a "whim." The 5 stamp mill is running double shift.

St. Anthony Mining Co.—J. F. O'Leary, manager; F. Horn, st manager, and 12 men.

The management are at present engaged in pumping out the old works which were allowed to partly fill with water. In the meantime several large leads are being opened near the anticlinal to the north, and some tests from these are being run through the mill.

Messrs. Boak & Oland.—These operators are opening a vertical pit on the apex of the anticlinal, and are also sinking several small shafts on the north dip close by.

TANGIER.

The Tangier Amalgamated Mining Co.—At the time of my visit the property was being pumped out, operations having been temporarily suspended pending negotiations with a new company.

Work during the year was principally confined to the Kent shaft which is 170 feet deep. A level was driven west 80 feet, and cut through a shoot of good ore which was intersected by the shaft in sinking and pitching west. The shaft is to be sunk another 100 feet when another level will be driven west to catch this shoot and possibly an underlying one.

Arch McPhail is still in charge of the work.

MOOSELAND.

The Arlington Mining & Milling Co.—R. McG. Fraser, Manager; Nath. Higgins, Foreman, with 4 men employed.

Work is being commenced on the "Cummings" belt. The shaft is 130 feet deep and will be sunk another 20 feet when drifts will be broken out on the lead. In the upper portion of the shaft there are two veins, but the belt at the bottom contains the "Cummings" lead only, about 5 inches in thickness. The same plant as mentioned in the last report on this mine is in use.

CARIBOU.

Baltimore and Nova Scotia Mining Co. L. W. Getchell, General Manager; Otto Collings, Assistant; J. S. Fleming, Underground Foreman; Fred Darragh, Surface Foreman. Sixty-two men employed.

During the past year development work has progressed extensively. A resumè of this work shows the following additions :—

No. 3, or the 700 feet level has been driven easterly another 40 feet, and is now 400 feet west of the cross-cut from the shaft. At this west face a raise has been made and a hoist installed and a winze sunk about 115 feet. The milling belt measures in this winze some 22 feet in width. Drifting has been started in both directions at the bottom of the winze, and will be pushed east at once to make connection by cross-cut, and raise, with the shaft at the 800-ft. level.

A large block of stoping has been done above this west 700-ft. level. This measures some 300 feet in length and from 60 feet to 120 feet in height.

At about 40 feet from the face of the same level, a cross tunnel is being driven to cut another belt some 700 feet to the southward. This cross-cut is now about 150 feet from the level. Near the west face of the 500-ft. level a cross-cut is being started north. A wooden tram road is in course of construction to carry fuel and mine timber from the Company's timber grants. When completed a light locomotive will be run on this.

No change of importance has been made in the plant.

WAVERLEY.

Waverley Gold Mining Co. At the time of inspection this mine had been closed down for several weeks on account of insufficiency of water power. There is some talk of installing a water power at Fall River with wire transmission for an electric plant.

During the year connection has been made with the "Temple" property, which has been worked under the same management. The vertical shaft on this property has been extended down on the vein from the bottom of the vertical portion and the levels successively joined with the older workings.

RENFREW.

Pictou Development Co.—H. McDonald, foreman, and 25 men employed.

This property has been bonded to J. Morrison under an agreement to transfer.

The workings now present the following appearance:

The main shaft, though not sunk on the true dip of the strata is vertical for 75 feet, and the remaining portion lies in the belt containing the "Jubilee" quartz. It is now 350 feet deep.

Levels were driven at the following depths and for the distances shown, all in a south easterly direction and on the vein:

No. 1	at a depth of	140 feet	for 75 feet.
No. 2	"	180 "	"
No. 3	"	250 "	"

At 75 feet from the shaft a cross "break" throws the strata on the east side of the fault south-westerly for a distance of about 25 feet. The plane of this fault pitches to the southeast and is parallel to the course of the shaft. At 300 feet in the shaft a short level is driven on the belt, and the ore is stoped up to the fault.

Cross-cuts are driven across from levels Nos. 1 and 2, on the fault.

The cross-cut from the No. 1 level is in 100 feet, at which point another vein was intersected and driven on for 30 feet. At 26 feet in this cross-cut, the original belt is driven on for 50 feet at which point another fault throws it back northerly 8 feet. A drift is in on the vein from here 30 feet. From where the cross-cut from the 180 ft. level reaches the vein across the break, the belt has been drifted on for 30 feet, and a small raise has been made from its face. The lead on the east side of the fault is very small. A new plant has been added at the "Jubilee" shaft.

Some 300 feet south of these works, a shaft 90 feet deep, is being sunk on a lead measuring in places about 12 inches. This shaft is 90 feet deep and when 100 feet has been reached levels will be driven.

This work is in charge of J. D. Horn.

Another shaft, now 40 feet deep, is being sunk on a lead near the road, to the north-east.

OLDHAM.

New England Gold Mining Co.—L. E. Daloz, manager, and four men.

These operators have opened up some old workings on the Columbia property in order to test their values.

Two shafts were cleaned out to a depth of about 100 feet. These shafts are about 60 feet apart. In the old works stoping had been carried to a distance of about 60 feet east of the east shaft, and from the bottom of the west shaft to the surface by breastwork.

A cross-cut between the shafts at the bottom level is driven north for 410 feet, and has cut several leads including the "Wallace," "North Wallace," "Dowell" "Worrell" and several others.

A 50 H.P. boiler and engine is in use.

Old Stirling Property.—John Forster and others are operating this property. E. Whidden is manager and 10 men are employed.

The boiler and engine house was burned on the 12th of August, necessitating a temporary stoppage of operations.

These workings are situated on the east turn of the anticlinal and two slopes or inclines starting from the same shaft house are driven down on the belt at about 35°.

Two slopes have been sunk from the same deck head.

The most southerly of these is 250 feet deep and at the bottom is 120 feet from the northerly slope which is 430 feet deep.

At 112 feet from surface in the north slope a cross-cut is driven east to meet a vertical shaft situated 264 feet from the mouth of the slope. This shaft is 120 feet deep. From 370 feet in this slope the ore was removed up to the bottom of the south slope. No stoping was done along the north side of the north slope as a fault occurred there. This, however, appears to be thinning out and the intention is to drive north on the belt.

LEIPSIGATE.

Mic-Mac Mining Co. T. W. Moore, Manager; W. A. Bryson, Foreman. Twenty-seven men in mine, and twenty-two on surface.

Since last season the workings have been extended as follows:

The shaft is now 370 feet deep. The 200-feet level has been extended to distances of 418 feet northeast and 360 feet southwest, but no work has been done above this level.

The 300-feet level is in 260 feet southwest and 281 feet northeast.

Blocks of stoping have been done between the 200-foot and 300-foot levels. These have been carried 200 feet on the northeast side of the shaft and 150 feet on the southwest side.

A new shaft-house has been built and contains a newly installed plant, including a 100 horse power Mumford boiler, a 50 horse power "Mundy" hoist, and an 8-drill Ingersoll compressor.

Work has recently been stopped underground to enable a new skip-way to be placed in the shaft. This was nearly finished, and a Northey pump (10x6x12) 5-inch suction and 4-inch discharge, has also being installed.

A trestle and tramway connects the shaft house and mill building, which has been enlarged and now contains a cyanide plant which has been running with apparent success since last February.

New foundations have been placed under the mortars. This plant includes four treatment vats (16x5) for tailings sand, and 2 settling tanks for slimes. The slimes are not treated at present, but the intention is to elaborate the plant so that their values may be extracted later.

The procedure is practically similar to that recorded before in the Mines Report: (See Caribou, 1901, and Isaac's Harbor, 1902.) The strong solution (.25 per cent.) is allowed to cover the sands about 3 inches, and after leaching, is strengthened gradually, until it comes out at the stopcocks the same strength as going in.

The sands are then washed and the total time of leaching from when the strong solution flows into the tank until the clean water comes out in the launders is about 30 hours.

These tanks hold nearly 50 tons, and one is filled and one emptied each day. At present "stock" is being taken from the old tailing beds as well as from the plate discharge.

H. S. Badger is in charge of this part of the work. Some tests were made recently by C. D. Maze as to the applicability of the Bromo-Cyanide process.

For particulars as to the operation of the above plant see the end of the gold report.

NORTH BROOKFIELD.

The Brookfield Gold Mining Co.—W. L. Libbey, General Manager Stanley Cole, Manager. From 60 to 65 men employed on double shift

All the work during the year since September, 1902, has been confined to the area below No. 9 level, and in detail, is shown as follows:

No. 10 level is in 510 feet from incline,
No. 11 " " 452 " " "
No. 12 " " 300 " " "
No. 13 " " 80 " " "

Above levels Nos. 10, 11, and 12 the stoping has been extended out to the faces of the level in each case. A small block has been removed above level No. 13.

The face of the sinking is now 1,758 feet from the deck, or at a vertical depth of about 975 feet from surface.

From a number of measurements taken at intervals in the stopes and in the faces of the four lower levels the slate belt containing this quartz deposit, and including the "gouge" seam, generally accompanying it. and which I was informed, comprised all the milling material, averaged in thickness 21 inches.

The same plant as last season is in use. Recently. experiments were made by C. D. Maze with the Bromo Cyanide process, but with what practical success I am not aware.

The manager informed me that the question of installing a cyanide plant was now under consideration.

MOUNT UNIACKE.

Westlake Property.—J. A. Crease is still in charge of the work with D. Patriquin as assistant. Eleven men are employed.

A new shaft-house has been built over the east shaft in which practically all the development during the past season has been done.

This work has consisted in following the rich "roll" to a distance of about 120 feet on its pitch east of the shaft. The angle of this pitch is from 18° to 20°.

Exploration has shown that this "roll" is probably caused by a disturbance in the form of a shattering or distortion of the strata, the crop of which strikes obliquely across the measures in a north-west and south-east direction, and pitching to the eastward more steeply as the disturbed zone is followed northward. To support this view, the case of similar "rolls" in the Westlake and Nuggety leads to the south may be taken as examples. In the Westlake the farthest south of the three veins, the "roll" occurred near the surface and lay almost flat along its pitch. In the Nuggety it was supposed to be slightly steeper, and in the present workings on the Borden lead it pitches, as stated above, at an angle of about 19°, and its upper end commencedat a depth of about 60 or 70 feet from the surface.

Following this theory, the management are driving at a depth of 120 feet in this east shaft to cut a vein lying about 20 feet to the northward, and in which they hope to find a similar roll to that now being worked so remuneratively.

In the western end of the mine near the west shaft a vein about 6 inches in thickness was followed into the wall and seemed to lie flat for several feet. It would appear that this might be indicative of an overlying and similar shoot of ore.

The question of these enlargements in the veins is a most interesting and important one to this part of the district, and will certainly repay thorough investigation.

J. A. Johnson's property.—These workings are situated on the Nuggety vein, and George E. Johnson is in charge of operations, with four men under his direction.

The old "Queen" shaft which was last year 160 feet in depth, has been deepened to 175 feet and sinking is still in progress.

At 250 feet a cross-cut will be driven north to the Borden lead. The "Nuggety" vein in this belt measures from 2 inches to 4½ inches, and near the bottom of the shaft another small vein 1½ inches in size, occurs in the centre of the belt. Work was commenced here about the middle of last August.

SOUTH UNIACKE.

The Victoria Mining Co.—John Kenty, manager; Daniel McEachern, foreman, and 32 men.

Work was commenced on the old "Withrow" property in June, 1902; but little of consequence was accomplished until March, 1903.

Since then the shaft on the "Slate" lead belt, 35 inches wide, has been deepened from 300 feet to 400 feet, and levels driven at this latter depth 130 feet east, and 113 feet west. Above this level three "lifts" have been taken out on each side by the overhand method. These stopes measure about 12 feet each in height. The extent of the old workings is approximately as follows:—

The 300 feet level is 444 feet east of shaft, and 380 feet west. The 200 feet level is 400 east and 150 west, and at 100 feet a level connects with a shaft 118 to the west. From this shaft a level is driven west 300 feet and the ground stoped above this to the shaft at a point 40 feet from surface. On the west side of the shaft the ground is out from the face of the 300 foot level to the face of the 200 foot level, and from there to the 100 foot level between the main shaft and the west shaft mentioned above.

On the east side the ore is all out between the 300 foot level and the surface.

The belt contains two leads, one 5 inches, on the hanging wall, an another, in the centre of the belt, about 1½ inches in thickness.

Three pumps are installed in the pit. An extra large Northey Compound Duplex 8x12 inch steam cylinder, 4½ inch plunger, and 12 inch stroke is stationed at the 300 feet level, in the hanging wall. This lifts from dams on each side of the 300 feet level. Just above this pump another Northey in the shaft is used alternatively. This is 7½ inches by 4½ inches, and 10 inches stroke.

A smaller Northey pump lifts from the bottom to the dam. A new shaft-house and mill building combined has just been completed The mill contains a 20 ton ore bin, and iron ore floor with rock and ore chutes, a Blake pattern rock breaker, challenge feed, and 10 stamps, and the mill engine.

A separate building contains two boilers and the hoist.

CYANIDE AND GOLD REDUCTION AT THE MIC-MAC MINING CO., LEIPSIGATE.

The following notes and figures will, no doubt, prove interesting, as the apparent success of the work at this mine may be duplicated at many other localities.

The facts were kindly furnished me by Mr. H. S. Badger, who is in charge of the milling plant at this mine.

The Ore.—The gangue of the ore is a calcareous quartz, containing slate and "gouge."

It carries per ton:—

Gold.. $10 58

Concentrates:--

Sulphides of Iron, Copper, Lead and Zinc.

By amalgamation it is found that the best recovery that can be got on the average was about $7.08 per ton.

By assay the ore contained $10.58 per ton.

It was therefore decided, after experiment, to put in a cyanide plant. This was completed in February, 1903, at a cost of $5,000.00. The plant has a capacity of about 50 tons per 24 hours, and operations were commenced on February 22nd.

The idea is to eventually treat the tailings from the mill plates alone; but in the meantime the old beds are also being treated. Difficulties are met here as the "sharps" and "slimes" often lie in separate layers, and mixed in places with organic matter, etc., which retards lixiviation.

Altogether 5,104 tons of stock valued at $3.78 per ton, or a total value of $18,295.00 were treated, and an extraction made of 74.9 per cent. equalling as shown by the mint returns $2.83 per ton.

The total cost of producing this is $1.05 per ton, divided as follows:

Labor for charging tanks	$0 26
" discharging tanks	09
Technical staff, including management	34
Cost of chemicals, per ton	33
Time for precipitation	03
Total cost per ton	$1 05

It must be borne in mind, as stated above, that about half the stock treated was from the old beds, thus considerably raising the cost of treatment as well as lowering the percentage of extraction. Again, the mill tailings contain about 50 per cent. of slime, worth about $2.25 per ton, or say $1.15 per ton of ore. At present the recovery from these is very limited, but as soon as possible arrangements will be made to separate these properly and treat them [illegible]tage.

The average value of the bullion produced by the cyanide process at this mine is $16.26 per ounce, composed of:—

Gold	792.90 parts.
Silver	126.60 "
Base metals:	
Zinc, Lead, Copper,	81.10 "
	1000.00

COPPER.

The Colonial Copper Co.

This company commenced work at their property in May, 1900, and the following description of what they have accomplished is from an examination on August 20, 1903

Area and Position.—This company's property is situated on the Peninsula of Cape D'Or, in Cumberland Co, and comprises three blocks of five square miles under license to search, and one lease of one square mile. The water front covered by them extends from Spencer Island to Horseshoe Cove.

Workings.—Three mines have been opened, the "Hanway lode," "No. 1" and "Bennet's Brook." Of these the first was the only one accessible at the time of my visit, and so far as can be ascertained it is considered the most important of the three.

"*Hanway Lode*".—The deposit which is being worked consists of a belt of breciated trap, containing in places boulders, and measuring from 35 to 60 feet in width. This belt contains in places, (the extent of which were hard to determine, from the limited nature of the workings,) masses of native copper. I saw pieces as large as 100 square inches or more in sizes and varying in thickness from ¼ inch down to the thickness of writing paper. At other points small nodules of metallic copper occurred, though in comparison with the extent of the deposit so far as worked, these "pockets" or rich "zones" were exceedingly small. It is assumed therefore that dependence is placed on the main belt, in which occassionally could be seen small shot-like particles of native copper. In order to venture an adequate opinion of the value of the belt it would be necessary to sample carefully and regularly across its width, at various points, and test by assay, or to be more accurate still it would be better to run systematic mill tests of the ore. The company volunteered no opinion of the value of the ore, and therefore no direct estimate of this can be made.

On this deposit two inclines have been sunk, one to the south varying in dip from 50 degrees to 30 degrees, and extending for 670 feet, and one to the north at 25 to 30 degrees, and some 500 feet in length. These have been connected by two levels and several drifts, cross-cuts and winzes have been made. The belt dips slightly to the west, and its east wall is distinctly defined by a vein of calcspar, averaging about ten inches in thickness. The south incline underlies the water at high tide, and the pit water at the bottom is salt. The workings, however are not to be prosecuted in this direction. The country rock outside and enclosing the belt is composed of a very hard trap rock.

BENNET BROOK MINE.

The following descriptions of both the "Bennet Brook Mine" and "No. 1" were given me by the management:

"*Bennet Brook Mine.*"—A shaft has been sunk in a deep ravine and near the water level for a depth of 180 feet, and several cross-cuts and drifts have been made from 20 feet to 100 feet in length. I understand the water became too heavy to handle here.

"*No. 1 Mine.*"—The shaft here is 371 feet in depth and two drifts, running south-east and west have been driven 450 feet and 460 feet respectively. From the end of the west drift an incline has been driven on a belt for 150 feet at 30 degrees.

PLANT.

"*Hanway Lode.*"—4 hoists, 1 2 Rand compressor, 3 drills, 1 receiver 6 drills (inactive). 1 150 horse power boiler, 1 75 horse power boiler 1 Smith & Vale pump, 1 Northey pump.

"*Bennet Brook Mine.*"—1, 50 horse power boiler, 1, 20 horse power boiler, 1 steam pump. The drills are run by air from Hanway Lode (900 feet of supply pipe and receiver.)

"*No. 1 Mine.*"—1 duplex Rand compressor, 12x18; 1, large Matheson boiler; 1, Florry hoist; 1, receiver; 1, small Armstrong engine and fan; 1, cage.

Mill Contains.—Grizzly, Blake pattern, rockbreaker, 2 sets rolls, screens and elevators, 3 jigs, 1 Ostermoor concentrator, 1 85 horse power boiler and a Jenckes 75 horse power Corliss engine.

The pumping station has 2 Northey duplex pumps and a boiler and is situated at Horse Shoe Cove.

A railway 1⅛ miles long connects mines and mills and the rolling stock comprises 1 locomotive and cars.

N. B.—A reference to this mine, as well as to the operations of the Cumberland Copper Co. at Wentworth, will be found in Mr. Cameron's report page 13.

IRON.

ARISAIG IRON DEPOSITS.

These beds are situated on Upper Doctor's Brook and its branches, in Antigonish County. It is about 1½ miles by road from Malignant Cove.

I examined the beds along their strike for about a mile, but am told their crops have been opened for a much longer distance each way. The apparent general strike of the strata is about N. 70° E., and the beds appear to dip northerly at a steep angle.

Campbell's Bank.—Six or seven distinct beds have been opened along the face of this hill, which is considerably over 100 feet in height, and rises on the west side of the East Branch.

Of these, No. 2 has been opened in several places, and shows about 12 feet in width.

No. 6 has been opened across its width, and shows a section of about 20 feet ore and stone. This belt lies on a dip of about 40° to the north on the surface, but plunges over at the bottom of the pit about 15 feet in depth. This belt has been opened east of the road as well.

Iron Brook.—From the openings on this brook, some half-mile west of the above, a better idea can be got of the deposits. The widths could not be ascertained accurately, owing to the pits in many cases being partially filled with debris, but the widths of the veins given below were supplied me by L. McDonald, who acted as guide, and is thoroughly acquainted with the ground. The numbering of the veins commences from the south, and runs northward.

No. 1 said to be 16 feet wide.
" 2 " 10 to 12 feet wide.
" 3 " 10 feet wide.
" 4 " 10 "

No. "A" opened between 4 and 5 appears small, but is not uncovered sufficiently to tell much about it.

No. 5 said to be 5 feet to 6 feet wide.

All these veins contain bands of stone alternating with the ore.

Some distance west of the Iron Brook pits, a vein 6 feet to 7 feet wide, and called the "Tunnel" vein was worked some 8 years ago, by the Nova Scotia Steel Co. These workings include an open cut, a 50 feet shaft and an adit in the hill, and have proved the vein for some 1500 feet along its crop. Several thousand tons were shipped at Arisaig Pier, the ore being carried there by a pole tramway.

TORBROOK IRON MINES.

These mines have been idle since the year 1896, but were re-opened in April, 1903, under the management of J. E. Leckie, A. S. Stevens is Underground Foreman, and 50 men are employed.

The underground workings show the following development work to have been done: The mine is opened by three shafts:

No. "2" or the Woodbury, is 312 feet deep.

No. "4" or the Berteaux, is 240 feet deep, and is 335 feet east of No. "2" shaft.

At 275 feet east of No. "4," the "Leary" or No. "5" shaft, is down 112 feet, and the ground stoped out to the east for 160 feet between the bottom level and the surface.

Levels are driven east of shaft No. 4 at 170 feet and 240 feet, for respective distances of 340 feet and 195 feet, and the ground from a point 215 feet from the shaft in the 170 feet level has been sloped up to the 112 feet level.

These two levels are also connected westerly with the No. "2" shaft, and are extended west of this shaft for about 400 feet. Practically all the ore above the 240 foot level, between No. "2" and No. "4" shafts and west of No. "2" shaft, has been removed up to the rface.

At 280 feet in No. 2 shaft, levels have been driven west 212 feet, and east 208 feet, and the ore stoped out above for about half the disance from the shaft to the faces on each side. This vein dips steeply in the upper portion of the shaft, and at from 45° to 50° farther down. Below the 240 feet level it again becomes steeper in dip.

The ore varies considerably in size, and in places it runs up to 12 feet in thickness.

The vein is apparently lenticular in form, the lenses pitching westerly at a low angle.

This characteristic applies to what was seen in the lower levels and may not be general throughout the mine, no facilities being afforded for a thorough examination of the facts in this connection.

Some distance west of the workings a surface trench some 200 feet long has cut three veins of hematite, measuring 8 feet, 5 feet, and 14 feet, respectively.

No. 2 shaft is the opening used for working the mine and the original steam plant is in use there.

Nearly 5000 tons of ore have been mined during the portion of the financial year that the mine has been worked, and the out-put is being shipped to Londonderry.

LONDONDERRY.

During the summer the approaches to the ore bodies were cleaned out and put in order. Mr. A. V. Cameron, the Deputy Inspector, reports timbering and air good.

BRIDGEVILLE.

Bridgeville Mining Co., Bridgeville, Pictou Co.—A. F. Grant, foreman at mine.

A two hundred foot shaft, which had been opened in 1900, was reopened in May, 1903, and worked till beginning of August, 1903, during which period (May to August) 3,000 tons of Limonite was reported to have been mined and sold to the Nova Scotia Steel Co. About 25 men were working. On July 1st a new shaft was started to the north which, on August 15th, was about 50 feet deep.

ANTIMONY MINES, WEST GORE.

November, 1903.

The mine was closed in the spring of 1900 and remained idle until Jan. 15th, 1903, when it was re-opened under the charge of C. N. Crowe, the present manager.

Since that date the mine has been pumped out, the shaft and levels cleaned up, a new skip-road put in and a new shaft house and engine house built. This building contains a 75 horse power Babcock & Wilcox water tube boiler and a 30 horse power Lidgerwood hoist. A Rand compound air compressor is also being installed, capable of running 5 drills.

Three shafts were sunk on this north vein as follows :

No. 1. (East shaft.) is 430 feet to the bottom level.

No. 2. (Middle shaft.) 160 feet west of No. 1, is 240 feet deep, and No. 3, the west shaft, 112 feet from No. 2, is about 180 feet deep.

Most of the ground is out between shafts No. 2 and No. 3.

At 114 feet in No. 1, a level has been cleaned out east 120 feet and west 80 feet to connect with a level from No. 2. At 226 feet, an old level has been cleaned out west 81 feet, and connects with a winze sunk from a level driven from No. 2 shaft. Small blocks of stoping had been done above these levels by the previous management.

At 316 feet, a level is in 280 feet east and 80 feet west, and at the bottom, levels are in 30 feet east and 40 feet west, and the ore has been stoped between this and the new level above.

No. 1 shaft, which was vertical for 240 feet and then connected by a 34-foot cross-cut with an inclined shaft on the vein 180 feet deeper.

Connection has been made recently by "raising" between this incline and the vertical portion of the shaft.

The enclosing rock is composed of a very soft slate, and the fissure vein contains Stibnite, native Antimony, Pyrite and occasional coatings of the oxides, Kermesite and Valentinite.

It runs in places up to 40 inches in thickness, but averages probably less than 10 inches. It may, however, be the intention to treat a greater thickness of belt than this.

I am told that during the summer, experiments carried on for the purpose have solved satisfactorily the question of concentration, and it is anticipated that machinery for this purpose will shortly be installed.

On the vein to the south no work has been done since the present re-opening of the mine.

SILICATE BRICK.

The following letter relates to some tests that were carried out at McGill University Laboratories some time ago on samples from the Silicate Brick Co. at North Sydney, C. B.

Between June and November of this year the Company sold about 700,000 bricks, and state that the demand is increasing rapidly. The low cost of production enables them to put these bricks on the market in competition with the lower grades of clay bricks. They are manufactured from sand 94 per cent. and lime 6 per cent., and after thorough mixing they are subjected to pressure in a mould and later to a steam pressure, when they are ready for use :

FACULTY OF APPLIED SCIENCE, MCGILL UNIVERSITY,
Montreal, July 12th, 1901.

DEAR SIRS,—Herewith I beg to forward to you the report of the freezing tests carried out upon the sample of brick, in accordance with your instructions.

The original specimen was divided into two parts, and numbered respectively, Spec. 1 and Spec. 2.

The compressive strength of the material in the normal condition was obtained with Spec. 1.

Spec. 2 was subjected to a series of 25 alternate freezing and thawing tests and was then tested for its compressive strength.

The freezing and thawing tests were carried out in the following manner :

The specimen, when thoroughly saturated, was enclosed in a chamber surrounded with the necessary freezing mixture, and subjected to a temperature ranging from 6 degs. to 14 degs. C., for periods which were approximately six hours during the day and fourteen hours during the night.

The thawing was effected by placing the specimen in a glass jar containing water, where it was allowed to remain for about 1½ hours, until a steady temperature was obtained.

The specimen showed no sign of bursting or cracking, but at the end of the 10th, thawing a slight disintegration at the edges and corners was observed. This disintegration continued throughout the remainder of the tests, and the particles were subsequently collected and weighed. The same water was used in the whole of the tests.

In determining the compressive strength, the specimens were faced with plaster of Paris.

RESULTS.

Specimen 1.

Weight (normal condition)—1.453 lbs.
Dimensions—3.84 ins. x 2.56 ins. x 2.20 ins.
Load area—9.83 square inches.
Actual crushing load—39,200 lbs.
Crushing load in lbs. per square inch—3,987.
Crushing load in kilogrammes per centimetre—280.9.

Specimen 2.

Weight (normal condition)—1.4196 lbs.
Weight (after submersion in water for 150 hours)—1.6016 lbs.
Absorption per cent.—12.9 per cent.
Weight of particles disintegrated from corners and edges by alternate freezing and thawing—.0094 lbs.
Load area—9.88 square inches.
Actual crushing load—29,800 lbs.
Crushing load in lbs. per square inch—3,016 lbs.
Crushing load in kilogrammes per centimetre—214.6.

(Sgd.) HENRY T. BOVEY.

All of which, together with the report on the Gold Mines, I beg to submit.

D'ARCY WEATHERBE, C. E.

Mines Department.

BORING MACHINES.

DR. E. GILPIN,
Deputy Commissioner of Public Works and Mines.

SIR,—Herewith I beg to hand you the annual report on progress from September 30th, 1902, to September 30th, 1903.

Since my last report the Calyx hand drill mentioned therein has been delivered and used at several points in Cape Breton, as will be noted below. It is termed No. 7 drill.

ITINERARY.

The following table of the dates of the locations of the different drills since their purchase may be found useful for reference :

No. and Description of Drill.	Locality of Boring.	Mineral Bored for.	Dates of Occupation.
No. 1. (" Calyx " steam) 1000 feet.	Nictaux, Annapolis Co.	Iron	Oct., 1900, to June, 1901.
	Kennetcook, Hants Co.	Coal.	Aug., 1901 to Dec., 1901.
	River Inhabitants, Rich. Co.	"	Mar., 1902, to Sept., 1902.
	Glendale, Richmond Co.	"	Sept., 1902, to Oct., 1902.
	Port Hood, Inverness Co.	"	Oct., 1902, to
No. 2. (" Diamond " steam) 850 feet.	Pottles' Lake and Ferris Lake, Cape Breton Co.	Coal.	Nov., 1900, to Oct., 1901.
	Drummond Colliery, Pictou Co.	"	Nov., 1901, to Nov. 1902.
	Foxbrook Road, do	"	Nov., 1902, to Sept., 1903.
	Stanley, Hants Co.	"	Sept., 1903, to
No. 3. (" Diamond " hand) 400 feet.	Whycocomagh, Inverness Co.	Iron.	1901, to Oct., 1901.
	Bridgeport Basin, C. B. Co.	Coal.	Nov., 1901, to Nov., 1902.
	Mira Road, Cape Breton Co.	"	Mar., 1902, to July, 1903.
	Polson's Brook, Antigonish Co.	Iron.	July, 1903, to Oct., 1903.
	Pleasant Valley, Antig. Co.	Coal.	Oct., 1903, to
No. 4. (" Diamond " hand) 400 feet.	Musquodoboit Valley, Hx. Co.	Coal.	1901, to Mar., 1902.
	Stewiacke Valley, Hx. Co.	"	Mar., 1902 to Oct., 1902.
	South Maitland, Hants Co.	"	Oct. 1902, to Feb., 1903.
	Lake Ainslie, Inv. Co.	Iron.	Feb., 1903, to May, 1903
	Boularderie Island, C. B. Co.	Coal.	May, 1903, to Oct., 1903
	Glendale, Inv. Co.	"	Oct., 1903, to

Table of Dates of Locations of different Drills.—Continued.

No. and Description of Drill.	Locality of Boring.	Mineral Bored for.	Dates of Occupation.
No. 5. "Calyx" steam) 1000 feet.	Hantsport, Hants Co. Apple River, Cumb. Co.	Coal. "	Sept., 1901, to Aug., 1903. Sept., 1903, to
No. 6. "Calyx" steam) 3000 feet.	New Glasgow.	Coal.	Sept., 1902.
No. 7 ("Calyx" 350 feet.	Broad Cove, Inv. Co. Port Hood, Inv. Co. Barra Head, Richmond Co.	Coal. " Limestone.	Mar., 1902, to June, 1903. July, 1903, to Sept. Oct., 1903.

PROGRESS FOR THE YEAR.

Drill No. 1.—On the 4th of November, 1902, this drill commenced boring in No. 1 hole at Port Hood, the location of this was about 200 feet south of the supposed crop of the seam now being worked by the Coal Company, and close to their new offices.

HOLE No. 1, PORT HOOD.

MATERIAL.	Thickness of Strata.		Total depth from surface.	
	Ft.	In.	Ft.	In.
Surface, etc	28	......	28	......
Soft dark shale	6	......	34	......
Grey sandstone	7	2	41	2
Soft fawn shale	8	7	49	9
Soft dark shale	9	......	58	9
Soft light shale	33	5	92	2
Hard dark shale	2	......	94	2

HOLE NO. 1, PORT HOOD.—(*Continued.*)

MATERIAL.	Thickness of Strata.		Total depth from surface.	
	Ft.	In.	Ft.	In.
Hard fawn colored shale	4	8	98	10
Bright coal	....	6	99	4
Fawn colored shale with hard nodules	35	11	135	3
Soft dark shale	27	11	163	2
Soft fawn shale fossiliferous	21	9	184	11
Sandstone, fossiliferous	7	7	192	6
Fawn shale, dark bands	4	9	197	3
Coal	....	6	197	9
Soft fawn shale	6	10	204	7
Fawn shale with dark bands	34	11	239	6
Dark clayey shale	2	......	241	6
Soft blue shale	26	7	268	1
Fawn shale	8	11	277	......
Fossiliferous sandstone	1	......	278	......
Fawn Shale	3	11	281	11
Fossiliferous sandstone	51	8	333	7
Fawn shale	4	7	338	2
Fossiliferous sandstone	39	7	377	9
Fawn shale	1	......	378	9
Fossiliferous sandstone	5	......	383	9
Sandstone with 2 bands of dark shale 6" each.	45	4	429	1
Dark shale	65	11	495	......
Softish fawn shale, fossiliferous	12	4	507	4
Coal	2	8	500	
Dark coaly shale or splint and dark shale	12	5	522	5
Coal	0	4	522	9
Sandstone, fossiliferous	6	6	529	3
Hard fawn shale	14	7	543	10
Sandstone with coaly bands	12	6	556	4
Dark shale with fossils	3	......	559	4
Fossiliferous sandstone	4	6	563	10
Dark shale, sandstone band	5	11	569	9
Fawn shale	....	9	570	6
Coal	....	6	571	......
Fawn shale	23	2	594	2
Mottled red shale, calcareous	4	......	598	2
Fossiliferous sandstone	9	......	607	2

HOLE No. 1, PORT HOOD.—(*Continued.*)

MATERIAL.	Thickness of Strata.		Total depth from surface.	
	Ft.	In.	Ft.	In.
Fawn shale	13	1	620	3
Dark shale	1	3	621	6
Reddish mottled shale	3	6	625	......
Dark fossiliferous shale	3	6	628	6
Sandstone, dark bands	99	3	727	9
Soft blue shale	5	5	732	9
Reddish shale	5	9	738	6
Soft blue shale	6	11	745	5
Sandstone micaceous	22	1	767	6
Hard dark blueish shale	13	9	781	3
Sandstone micaceous	18	5	799	8
Hard fawn shale	17	2	816	10
Coal	1	6	818	4
Sandstone with shale band	13	......	831	4
Dark clayey shale	13	2	844	6

It will be seen that several small seams of coal were intersected, the largest of which was 2 feet 8 inches.

A summary of the cost of the hole, etc., as supplied by the drill runner, J. L. Phinney, is as follows:

Commenced hole, Nov. 4, 1902. Finished hole, Feb. 22, 1903.

Management	$ 372 12
Labour	1013 45
Fuel	64 50
Oil, waste, light, etc	12 88
Shot and gravel, about	70 00
	$1532 95

Cost per foot, $1.81.

The apparent low rate of speed of boring was particularly due to the caving of the hole, which necessitated constant washing to te the necessity for casing.

HOLE No. 2.

No. 2 hole was put down at a point 300 feet east of the iron bridge over Little River, and gave the following section :

MATERIAL.	Thickness of Strata.		Total Depth from Surface.	
	Ft.	In	Ft.	In.
Red clay and small boulders	25	6	25	6
Coal	2	6	28	......
Dark shale	24	8	52	8
Coal	....	6	53	2
Dark shale	2	8	55	10
Light shale	11	......	66	10
Dark shale	2	8	69	6
Light shale	19	5	88	11
Red mottled shale	8	......	96	11
Grey sandstone	1	......	97	11
Light shale	10	11	108	10
Red and blue mottled shale	8	......	116	10
Grey sandstone	98	7	215	5
Red and blue mottled shale	51	......	266	5
Grey Sandstone	19	5	285	10
Fawn shale	9	......	294	10
Grey sandstone	4	6	299	4
Fawn shale	26	6	325	10
Coal	1	6	327	4
Dark shale	4	8	332	0
Grey sandstone	3	......	335	0
Blue shale	15	......	350	0
Dark shale	6	11	356	11
Light shale	1	7	358	6
Coal	....	9	359	3
Dark shale	5	......	364	3
Coal	1	......	365	3
Dark shale	3	7	368	10
Light fawn shale	10	5	379	3
Light sandstone	6	......	385	3
Soft fawn shale	8	10	394	1
Micaceous sandstone	36	3	430	4
Coarse white sandstone	....	11	431	3

Hole No. 2.—(*Continued.*)

Material.	Thickness of Strata.		Total Depth Strata.	
	Ft.	In.	Ft.	In.
Dark shale	18	6	449	9
Coal	3	......	452	9
Dark shale	....	3	453	0
Dark bluish shale with lime nodules	19	10	472	10
Coal	....	6	473	4
Dark shale	27	9	501	1
Sandstone	3	6	504	7
Dark shale	4	2	508	9
Fawn shale	42	2	551	11
Coal	1	9	552	8
Dark shale	1	7	554	3
Poor coal	1	9	556	0
Fawn shale	18	4	574	4
Dark shale, fossiliferous	6	......	580	4
Coal	....	6	580	10
Hard dark shale	1	......	581	10
Coal	1	2	583	0
Hard dark shale	....	9	583	9
Micaceous sandstone	3	......	586	9
Hard dark shale	6	9	593	6
Coal	....	2	593	8
Dark shale	1	4	595	0
Coal	....	3	595	3
Dark shale	....	9	596	0
Micaceous sandstone	1	2	597	2
Fawn shale	4	1	601	3
Micaceous sandstone	1	9	603	0
Fine fawn shale	9	3	612	3
Dark shale	66	......	678	3
Coal	....	10	679	1
Dark shale	15	3	694	4
Mottled red shale	12	11	707	3
Micaceous fine sandstone	28	6	735	9

COST OF NO. 2 BOREHOLE.

Management	$ 240	75
Labor	726	00
Oil, Light and waste	16	50
Shot	56	99
Fuel	60	00
Cost per foot—$1.49.	$1100	24

Hole begun Mar. 14, 1903; finished May 19, 1903.

Near the bottom of this hole, at 728 feet, the drill runner reported 4 inches of "oily sand," which is not shown in the record.

Hole No. 3 was bored near the south end of Smith's Island, and was commenced on July 2, 1903, and was finished on Sept. 9, 1903.

HOLE NO. 3.

MATERIAL.	Thickness of Strata.		Total Depth from Surface.	
	Feet.	Inches.	Feet.	Inches.
Surface, red clay, etc	18	6	18	6
Sandstone with conglomerate bands	76	4	94	10
Conglomerate	5	....	99	10
Grey sandstone,	345	....	444	10
Fawn shale	9	1	453	11
Grey sandstone	5	7	459	6
Red shale	39	10	499	4
Broken red shale	147	1	646	5
Red hard sandstone	9	2	655	7
Soft red shale	29	....	684	7
Red and bluish shale	120	9	805	4

Expense account for above hole:

Management	$335	16
Labor	1067	00
Fuel	105	00
Oil and waste	7	60
Shot and Gravel	52	00
Total	$1566	76

Cost per foot, $1.94.

It claimed that this hole, through unnecessary delays, should only have cost about $1.60 per foot.

No. 4 hole was commenced on October 1st, 1903, at a point 300 feet from the junction of Main and Lawrence streets, on the road to Little Mabou.

The hole was finished Nov. 10, 1903, and the following record shows the strata intersected.

From the section it is difficult to co-relate the horizon of the rocks in this hole with those of Nos. 1, 2 and 3. The records would seem to represent the section exposed on the shore north of Linzee Point, and if this is true, would probably considerably underlie the seam now being worked by the Port Hood Coal Company. On the other hand, it is just possible that this seam turns shoreward as it is followed northerly.

A seam on the Jamieson farm, north of the bore-hole, which was opened some 25 or 30 years ago, might correspond with the seam reported as showing 5 feet of coal in this bore-hole.

A section of this "Jamieson" seam, as supplied me, shows as follows, although this cannot be verified :—

	Feet.	Inches.
Coal	2	
Shale	1	
Coal	1	
Shale		6
Coal	3	
Total	7	6

HOLE No. 4.

MATERIAL.	Thickness of Strata.		Total Depth from Surface.	
	Feet.	Inches.	Feet.	Inches.
Surface	14	6	14	6
Grey sandstone	137	11	152	5
Bluish shale	9	2	161	7
Coarse grey sandstone	85	5	247	0
Coal	1	10	248	10
Dark shale	3	....	251	10
Fine micaceous sandstone	3	....	254	10
Light bluish shale	9	6	264	....
Brown shale	3	....	267	4
Dark bluish shale	28	3	295	7
Grey sandstone	1	6	297	1
Dark shale	17	5	314	6
Grey sandstone	60	1	374	7
Dark shale	8	6	383	1
Coal	2	8	385	9
Splint	....	4	386	1
Shaley Coal	5	....	391	1
Blue shale	21	1	412	2
Dark shale	4	7	416	9
Coal	1	10	418	7
Blue shale	6	....	424	7
Coal	2	....	426	7
Blue shale	54	7	481	2
Coal	....	6	481	8
Bluish shale	6	....	487	8
Coal	2	3	489	11
Light fawn shale	7	9	497	8
Coal	2	6	500	2
Bluish shale	25	10	526	....
Coal	1	10	527	10
Dark shale	6	....	533	10
Grey sandstone	7	8	541	6
Bluish shale	6	11	548	5
Dark shale	1	4	549	9
Bluish shale	2	4	552	1
Dark shale	1	2	553	3
Coaly shale	1	9	555	....
Bluish shale	16	1	571	1
Dark shale	10	11	582	....

COST OF NO. 4 BOREHOLE.

Management	$159 00
Labor	499 00
Oil, waste and shot	56 40
Fuel	90 00
	$804 40

Cost per foot $1.38.

Drill No. 2.—A hole was put down about a quarter of a mile east of the Foxbrook road, so-called, and about two miles from the Drummond Colliery. This was commenced on November 18th, 1902, and finished on July 10th, 1903.

MATERIAL.	Thickness of Strata.		Total Depth from Surface.	
	Ft.	In.	Ft.	In.
Surface material	8	......	8	......
Grey friable shale	60	......	68	......
Light grey sandstone	22	......	90	......
Fine reddish shale	30	......	120	......
Reddish clay (or shale)	70	......	190	......
Hard brown sandstone	32	......	222	......
Grey sandstone	17	......	239	......
Reddish clay (or shale)	27	......	266	......
Soft brown sandstone	14	......	300	......
Red shale	34	......	314	......
Hard grey shale	22	......	336	......
Soft sandstone	6	......	342	......
Light fire clay	1	......	343	......
Grey broken shale	10	......	353	......
Grey sandstone	8	......	361	......
Grey sandstone	26	......	387	......
Dark red shale	84	......	471	......
Black shale	4	......	475	......
Grey sandstone	10	......	485	......
Grey, very hard sandstone	6	......	491	......
Red shale	129	......	620	......

The drill was then moved during the late summer to Stanley, in Hants County, and boring was commenced on September 22nd, 1903, at a point between the track of the Midland Railway and the Kennetcook River.

Drill No. 3—This drill lay idle in Sydney for some months, and in July it was taken to Polson's Brook, in Antigonish County, where boring was commenced on the 15th.

The object of boring here was iron, but the drill returns were so imperfectly made that the results are very much confused.

It appears, however, that 75 feet was bored in broken reddish slates, and that a thick bed of iron ore was entered near the bottom of the hole.

On October 26th, 1903, the drill commenced boring at Pleasant Valley, in the same county, and drilled 84 feet in sandstones and shales.

Drill No. 4.—At Maitland, after boring about 60 feet, the hole was lost by a carbon getting in it, and shortly after, the drill was moved to the store-house at Stellarton.

It was taken in February to Lake Ainslie, and in May to Boularderie, but in neither of these places was any drilling done.

On October 31st of the present calendar year the drill commenced boring at Glendale, for coal.

Drill No. 5.—Boring was continued at Hantsport until August 5th, 1903, when a depth of 1,496 feet was reached. From 985 feet to the bottom the cores showed a continuation of the dark shales and sandstones bored through above and given in last years report

The drill was then sent to East Apple River in Cumberland County, and commenced boring for coal on September 18th. Upwards of 300 square miles have been covered by rights for coal in this locality during the year.

A record of the hole to date is appended:

MATERIAL.	Thickness of Strata.		Total Depth from Surface.	
	Ft.	In.	Ft.	In.
Surface material	8	......	8	......
Light grey sandstone	1	......	9	......
Reddish gravel	1	......	10	......
Light greenish grey compact sandstone	6	......	16	......
Dark argillaceous shales with fossils	1	......	17	......
Light grey and mottled shales	28	......	45	......
Reddish sandstone	1	6	46	6
Reddish conglomerate	3	......	49	6
Very fine micaceous sandstone	5	6	55	......
Reddish conglomerate	13	......	68	......
Reddish micaceous sandstone	2	......	70	......
Reddish conglomerate	1	......	71	......
Reddish grey shale	....	8	71	8
Black coaly shale	....	8	72	4
Greenish shale with fossils	....	6	72	10
Greenish grey argillaceous shale	2	......	74	10
Greenish grey shale showing graphite	4	2	79	......
Reddish argillaceous shales with greenish blotches showing fossils	2	......	81	......
Reddish grey very hard sandstone	1	......	82	......
Reddish conglomerate	4	......	86	......

Drill No. 6.—Commenced boring at about 1½ miles north of New Glasgow, and ½ mile west of the East River.

Drill No. 7—This drill is a Calyx hand drill, capable of boring to about 400 feet. It was first used at Broad Cove, and the results gained are as follows:

Hole No. 1 was put down about 2500 feet east of McIsaac's Pond.

MATERIAL.	Thickness of Strata.		Total Depth from Surface.	
	Ft.	In.	Ft.	In.
Sand and pebbles	44	6	44	6
Clay	6	......	50	6
Red clay	3	......	53	6
Sandstones	9	6	63	......
Fawn shale	2	......	65	......
Sandstone	3	4	68	4

Cost of the above hole:

Management	$60 00
Labor	75 00
Oil, waste, etc.	65
Total	$135 65

Cost per foot, $2.00.

Hole No. 2 was bored for 29 feet, and No. 3 hole for 61 feet, and showed practically the same results as above. The cost of these were respectively $1.37 per foot and 77 cents per foot.

No. 4 hole gave the following record:—

	Feet.	Inches.	Feet.	Inches.
Sand (and drift wood)	31	...	31	...
Coal	5	8	36	8
Sandstone	1	4	38	...

The total cost was $57.70, or $1.51 per foot.

No. 5 hole showed:—

Material.	Feet.	Inches.	Feet.	Inches.
Sand and cobble stones	27	...	27	...
Soft mud	4	...	31	...
Cobble stones	2	6	33	6
Sandstone	30	6	64	...
Coal	6	9	70	9
Soft shale	1	...	71	9
Sandstone	...	3	72	...

This hole cost 71 cents per foot.

The drill was then moved to Port Hood and a hole commenced on July 16th, 1903. This hole was situated 700 feet east of the main street, and on the hill just behind the Old Smith Hotel.

MATERIAL.	Thickness of Strata.		Total Depth from Surface.	
	Ft.	In.	Ft.	In.
Surface material	**23**	......	**23**	......
Grey sandstone	**34**	6	**57**	6
Grey sandstone showing signs of coal	....	7	**58**	......
Sandstone showing fossils	**28**	......	**86**	......
Blue shale	**4**	......	90	......
Grey sandstone	**30**	......	**120**	......
Blue shale	**2**	......	**122**	......
Grey sandstone	31	......	**155**	......
Blue shale	**2**	.....	**155**	......
Grey sandstone	**52**	......	207	......
Coal	....	4	207	4
Grey sandstone	8	......	215	1
Blue shale	7	......	222	1
Coal	2	8	225	......
Blue shale	17	......	242	......
Brown mottled shales	3	......	245	......
Dark argillaceous shales	40	......	285	......

This hole cost $1.47 per foot.

The cost sheets for these holes were furnished by the drill runners, and so far as I can ascertain, they are fairly correct. In some cases there are extra expenses incurred by the operatorin housing drill, boxing cores, etc , etc.

From the returns made, the results in speed of drilling and cost per foot have been very satisfactory, and show an improvement, and so far as I can learn, compare well with the work done in other places.

I remain

Your obedient servant,

D'ARCY WEATHERBE, C. E.

Mines Department.

PROVINCIAL MUSEUM
AND SCIENCE LIBRARY.

PROVINCIAL MUSEUM,
Halifax, N. S., 21st December, 1903.

To E. GILPIN, JR., ESQ., LL. D., etc.,
Deputy Commissioner of Public Works and Mines :—

SIR,—I respectfully present herein a report on the Provincial Museum of Nova Scotia and the Provincial Science Library, for the year 1903.

PROVINCIAL MUSEUM.

During the year 744 accessions were catalogued, representing 1911 specimens, almost entirely relating to the province. It may be mentioned that during the past four years the following additions have been received :—

1900	1202	specimens	= 133	accessions.
1901	2660	"	= 545	"
1902	2021	"	= 758	"
1903	1911	"	= 744	"
Total: 4 years	7794	"	= 2180	"

Economic Minerals at Provincial Exhibition.—Last July I received directions from the Department to collect and install at the Provincial Exhibition to be held in Halifax in September, 1903, a collection of the economic minerals of the province. I accordingly left Halifax on July 21st and proceeded through the province, going as far as Middleton, Amherst and Sydney and visiting intervening localities, finally returning on August 28th to prepare the specimens for exhibit.

As the result, there were displayed at the exhibition, which opened September 9th, about 194 large samples illustrative of most of the deposits of economic importance in the province, and embracing perhaps almost double as many individual specimens. The samples as regards kinds were distributed as follows :

Coal	21
Graphite	2
Petroleum	1
Gold	24
Lead	3
Copper	12
Iron	54
Gypsum	11
Manganese	6
Antimony	1
Limestone, marble and dolomite	9
Barytes	12
Building stone and grindstones	22
Fire-clay	3
Clay and bricks	6
Moulding sand	3
Miscellaneous	4

An effort was made to have these specimens of uniform size, a six-inch cube being obtained whenever possible; and when the mineral was fragmentary it was displayed in a glass-front box of equivalent size. The coals were shown in boxes in uniform lots of about a bushel each. Each specimen was labelled with name, exact locality, owner's name, and the formation in which it occurs. The collection included some very rich gold specimens, the Department's series being supplimented by some fine samples lent by individuals. With the specimens were shown maps, plans and a number of photographs of mines, mine buildings and mining plants.

To accompany the collection, I prepared, at your direction, a 39-page descriptive catalogue of the specimens, giving a short history of each deposit, the amount of development, output, nearness to shipping point, name of owner, etc., and, when possible, analyses of the ores. Of this catalogue a large edition was published by the Department and distributed free at the exhibition.

The collection, which occupied the entire north gallery of the main building, attracted, I believe, a good deal of attention and was awarded a medal.

At the close of the exhibition the collection was packed and stored on the grounds, to be again exhibited in future years, the intention being that it should be a permanent one to be added to each year.

The location in which the specimens were shown was not a good one, being in the gallery of the building. It was impossible to exhibit some large specimens which were on hand, and the weight of material may not in future be within the limit of the building's strength when crowded with people. What seems to be most needed, is a separate building in which the specimens can be permanently arranged, and in which individual exhibitors of mineral products can arrange permanent exhibits. An individual exhibitor who has to remove his material at the close of the exhibition, will exhibit but once, or only at rare intervals, whereas if a permanent location were secured, good exhibits would be assured each year from private per-s as well as the Department. Minerals do not deteriorate, and are perhaps more suitable for display in a permanent separate building than any other products shown at an exhibition.

Minerals in Museum.—While engaged in collecting these minerals for the exhibition, I was also enabled to secure some 290 specimens of minerals and rocks for the Museum collection, and all of these have since been trimmed, catalogued and labelled.

As stated in the last report, the Nova Scotian economic minerals sent to the Paris International Exhibition of 1900 and afterwards exhibited at Glasgow and Dublin, have been received, and have since been unpacked and incorporated with the collection at this Museum. The set embraces about 109 samples or about 260 individual specimens. It was at first understood that the set would remains in England as mentioned in a previous report.

Thirty specimens illustrating the structure of rocks have been obtained from G. F. Frazar, of Medford. Seventy-eight minerals not represented in our general reference (foreign) collection, were also obtained from the same source, which makes this department of the Museum fairly complete for our needs.

Shelves have been placed under some of the cases to hold the larger mineral samples. Specimens, however, are now on hand, ready, I think, to more than double the case space at present occupied by Nova Scotian minerals.

The principal persons who have donated minerals and rocks are the following:—Rev. D. Sutherland (a large collection of minerals, &c., from the vicinity of Gabarouse, C. B.), Loran A. DeWolfe (rocks from coal-measures of Cape Breton), C. A. Meissner (miscellaneous minerals), F. H. Mason (miscellaneous minerals), A. L. Nichols (minerals, &c., from Kings Co.), J. F. Herbin (trap minerals), Dr. P. A. Holmes, Dr. H. S. Poole, Londonderry Iron and Mining Co., Cumberland Copper Co., Dr. G. C. Hoffmann (specimen of Baddeckite), T. V. Hill, Geo. J. Macintosh, F.W. Fraser, T. Routledge, and C.Stanley Bruce.

Mammals.—Efforts have been made to increase our collection of small mammals found in the province, in which I have been assisted by F. H. Reid, of Middleton. We much need specimens of a few of our most valuable fur-bearing animals, the value of whose pelts makes them items of some expense, such as the Sable or Pine Marten, Pekan or Fisher, Beaver, Otter and Bear. The Moose and Woodland Caribou, our chief big game, are unrepresented save by antlers of the former. A peculiar abnormal Hare taken in the woods at Lower Stewiacke has been presented by F. W. Holesworth.

Birds.—A number of interesting birds hitherto unrepresented in our cases, have been added, including two Turkey Vultures (*C. aura*), a bird of only casual occurrence in Nova Scotia, one taken at Clark's

Harbor, Shelburne Co., in the fall of 1892, presented by E. C. Allen, of Yarmouth, and the other taken at Middleboro, Cumberland Co., about 1899, presented by Arthur W. Betts, of Amherst. Other rare or interesting species obtained are a Least Bittern (the only individual taken in the province) presented by Mrs. R. T. Murray, Canvas-back Duck, Bartramian Sandpiper, Red-winged Blackbird, Florida Gallinule, Bronzed Grackle, Ipswich Sparrow, Golden Plover and Iceland Gull. What is now chiefly wanted to make the collection fairly complete is some of the rarer species. R. W. Tufts, F. H. Reid, E. C. Allen and L. E. Allen have assisted much in obtaining desiderata in this line.

As in previous years, systematically recorded observations on bird migration have been received from R. W. Tufts, Wolfville; C. R. Harte, Sydney; L. E Allen, Salem, Yar. Co.; E. C. Allen, Yarmouth; F. H. Reid, Church Point, Digby Co.; J. W. McL. Bouteillier, Sable Island; and others.

Fish.—It is found difficult to add much material to the fish collection, although a small number of specimens are secured from time to time. Fish dealers have been requested to bring in any unusual specimens, but with poor results. Among the specimens obtained during the past year is another specimen of the Tautog (*T. onitis*) the second example taken in the province.

Invertebrates.—A number of Blue Crabs (*Callinectes sapidus*) have been obtained from Cow Bay and the Eastern Passage, showing that this species has an established habitat in the province. Its occurrance was first noted in my last report. This is the species which is much used for food further to the south, where it is found from Cape Cod to Florida. Among the invertebrates may be noted additions from the Cable Steamship *Minia*, Miss M. Brown and John Moser.

Botany. The Museum is much indebted to the New York Botanical Garden (through Dr. Marshall A. Howe, assistant curator) for a valuable collection of 775 specimens of dried plants, collected in 1901 in Nova Scotia and Newfoundland by an exploring party from the Garden. Our herbarium is now of large size and embraces the following collections:

Dr. Lindsay's N. S. herbarium	1397	specimens.
N. Y. Botan. Gardens', N.S. and Nfld. plants.	775	"
Dr. How's N. S. Herbarium............about	325	"
W. H. Prest's Labrador plants...............	259	"
Mrs. Almon's Sable Island plants............	214	"
W. H. Prest's Wyse's Corner plants.........	177	"
Judge DesBrisay's N. S. algæ	160	"
Miscellaneous	20	"
Total, ...	3327	"

I have not yet been able to mount the large number of loose specimens in the herbarium, which must be done before they are available for examination.

Miscellaneous.—John A. Wilson, sculptor, of Boston, a native of Pictou Co., N. S., has donated an enlarged photograph of a spirited statue of a lion, an original design of his and giving evidence of much promise.

As usual, a good deal of information, both by letter and verbally, regarding the minerals and other resources of the province, has been supplied in answer to inquiries which are constantly received.

A list of donors is appended:

DONORS.

Acadia Coal Co., Stellarton; Allen (E. C.), Yarmouth; Allen (L. E.), Salem; Almon (Albert), Sydney.

Baird (Jas.), Chignecto Mines; Bayne (A. R.), Boston; Betts (Arthur W.), Amherst; Bishop (Walter B.), Canning; Bliss (Wm.); Bouteillier (J. W. McL.), Sable Island; Bown (E. T.), Eskasoni; Brown (E. Percy), Bridgewater; Brown (Miss M.); Brown (R. H.); Bruce (C. Stanley), Shelburne; Burgess Bros., Cheverie.

Cain (Dr. H. W.), Bridgewater; Canada Coals & Ry. Co., Joggins; Cape Breton Silicate Brick Co., North Sydney; Carlyle (Fred.) Waverley; Cheticamp Gold Mining Co.; Chignecto Mine, Cumberland Co.; Churchill (Geo. W.), Hantsport; Collie (Dr. Jas. R.), River John; Corbett (Geo. E.), Annapolis; Cumberland Copper Co., Wentworth Centre.

DeWolfe (Loran A), North Sydney; Dixon (R.), Antigonish; Dominion Antimony Co.; Dominion Iron & Steel Co., Sydney; Dustan (W. M.), Pictou.

Eastern Milling Co., Dartmouth.

Ferguson (Neil), Sydney; Fletcher (Hugh), Springhill; Francklyn (Geo. E.); Fraser (F. W.), Pictou.

Gammon (Wm.), River John; Gentles (Jas.), Windsor; Geological Survey of Canada, Ottawa; Gilpin (Alfred E. Haliburton-); Gilpin (Dr. E., Jr.)

Hallock (Charles), Washington, U. S. A.; Harrison (J. W.), Parrsboro; Harte (Charles Rufus), Sydney; Hayes (Dr. Joseph), Parrsboro; Henderson & Potts; Herbin (J. F.), Wolfville; Hicks (John H.), Bridgetown; Hill (T. V.); Hoffmann (Dr. G. Chr.), Ottawa;

Holesworth (F. W.), Stewiacke; Holmes (Dr. P. A.), Parrsboro; Holmes (Hon. S. H.); Horn (J. W.), Brandon, Vt., U. S. A.; Houldsworth (W. J.); Howe (Dr. Marshall A.), New York, U. S. A.; Huggins (Geo. M.), Barrington Passage.

Ilsley (Stephen), Berwick; International Brick & Tile Co., Bridgetown; Inverness Mining Co.

Johnstone, A. D.

Keddy (N. W.), Berwick; Kirkpatrick (Robie), Parrsboro.

Langille (Miss), Oliver; LeVatte (H. C. V.), Louisbourg; Lithgow (Wm.); Londonderry Iron & Mining Co., Londonderry; Lorimer (Wm.), Springhill; Lowe (J. Seaman), Amherst; Lynn (Lambert), Bedford.

MacAloney (John); McDonald (Archibald), Whycocomagh; Macdonald (Col. Chas. J.); Macdonald (C. Ochiltree); McDougall (H. F.), Christmas Island; McFatridge (Wm.); McGillivray (Angus); McGillivray (Colin); Macintosh (Geo. J.); McIntosh (Peter), Pleasant Bay; McKay (Sheriff), Baddeck; McKay (Alexander), Lansdowne; MacKay, (Dr. A. H.); MacKean (Mrs. Albert); McKenzie (Jas. W.); McKenzie (John A.), Sydney; McLean (—), Whycocomagh, McPherson (Rev. M. A.), Little Bras d'Or; McPherson (W. A.), Pugwash Junction; Magee (Dr. W. H.), Parrsboro; Malpas (C. W.), H. M. S. "Indefatigable"; Maritime Clay Works, Pugwash; Mason, (Alfred E. Harley), London, Eng.; Mason, (F. H.); Meissner (C. A.), Sydney; Mines Department of N. S.; Mira Brick Co., Mira River, Mitchell (Thos.), Whycocomagh; Moffatt (Chas. P.), North Sydney; Morgan (Jenkins), Springhill; Moseley (E. W.), Sydney; Moser (John) Butternut Ridge, N. B.; Mosher (Thos. A.), Windsor; Muller (J. T. H.), Windsor; Murray (Mrs. Robert T.).

National Zoological Park, Washington, U. S. A.; New York Botanical Garden, New York, U. S. A.; New Ross Manganese Co., New Ross; Nichols (Arthur L.), Berwick; Nova Scotia Colliery, Maccan; Nova Scotia Oil and Gas Co.; Nova Scotia Steel Co.

Perrin (J.), McNab's Island; Phinney (J. L.); Pictou Quarries Co., Pictou; Poole (Dr. Henry S.); Provincial Normal School, Truro.

Reid (Frank H.), Middleton; Routledge (T.), Sydney.

Shipley (Fred. S.), Brookdale; Silver (Arthur P.); Sinclair (Archibald), Bridgeville; Sinclair (J. H.), M. P. P., New Glasgow; Stayner (Chas.) Strachan (John); Sutherland (Rev. Donald), Gabarouse; Sydney Coal Co., North Sydney.

Taunton (Wm. D.); Truro Foundry and Machine Co., Truro; Tufts bie W.) Wolfville.

Wallace Stone Co., Wallace; Weatherbe (D'A.); Wentworth Gypsum Co., Windsor; Wier (H. V.); Wilkie (C. N.), Antigonish; Wilson (John A.), Boston, U. S. A.; Windsor Foundry & Machine Co., Windsor; Windsor Gypsum Co, Windsor; Windsor Plaster Co., Windsor; Woodworth (John E.), Berwick.

Young (P. L), London, Eng.

SCIENCE LIBRARY.

During the year about five hundred dollars worth of new manuals and comprehensive treatises have been ordered, embracing some of the most recent works on the various branches of mining, prospecting, mine accounts and book-keeping, metallurgy, metallography, assaying, chemistry, electricity, geology, physical geography, mineralogy, lithology, palæontology, climatology, agriculture, horticulture, animal breeding and feeding, poultry keeping, bee keeping, botany, forestry, zoology, building construction, plumbing and heating, stone working, brick and tile making, road construction, bridge building, tanning, foundry practice, fuels, hygiene and sanitary engineering, and education.

The majority of the books deal with mining and the related sciences, and the value of the Library is apparent in its relationship to the School of Mining recently established in this city. In purchasing books, the bearing of the Library on the industries and resources of the country is kept constantly in mind, and the opinion of specialists has been obtained regarding the selection of works.

Besides the great number of exchanges from scientific societies coming to us as usual through the Nova Scotian Institute of Science, accessions have been received through the Mining Society of Nova Scotia and further transfers from the Legislative Library, the Department of Mines, the Secretary for Agriculture, Dr. Gilpin and R. H. Brown. Dr. H. S. Poole has presented four manuscript volumes containing a continuous series of meteorological observations made from October, 1842, to April, 1854, at Albion Mines, Pictou Co., by the late H. Poole.

I feel that the transfer of scientific works from the Legislative Library will not have been completed until the various pamphlets on scientific subjects, especially those relating to the province, have passed to this Library. In order to concentrate all our resources, the transfer should be carried to completion and not merely include the bound volumes.

The fifty-seven volumes reported in the binder's hands last year have been returned and the same number has since been sent to him and again placed on the shelves.

It may be mentioned that after a good deal of difficulty a complete set of the reports of the Mines Department of Nova Scotia has been obtained and bound in three volumes.

The first annual issue of the International Catalogue of Scientific Literature, to which the Library subscribed, is now about completed and furnishes ready references to the vast amount of material appearing in the scientific serials of the year.

The following list of the non-society periodicals received, may be of interest:—

Canadian Mining Review, Ottawa.
Coal Trade Journal, New York.
Colliery Guardian, London.
Educational Review, St. John.
Engineering and Mining Journal, New York.
Industrial Advocate, Halifax.
Maritime Mining Record, Stellarton.
Mines and Minerals, Scranton, Pa.
Mining Journal, London.
Nature, London.
Science, New York.
Scientific American Supplement, New York.

The Mining Society of Nova Scotia and the N. S. Institute of Science have held meetings in the reading room.

I beg respectfully to call attention to the necessity for much more binding being done, as referred to in my last report, for the large number of serials that come to the Library need binding before they become readily accessible or even capable of proper preservation.

Among our greatest needs just now, are a card catalogue of the manuals and other treatises and a preliminary short-title catalogue that can be distributed to readers. The greater facilities there are for the public to ascertain what books we possess and the more the Library is used (and the latter is often a result of the former), the sooner will good results be manifest in improved methods in the various industries on which the Library bears.

Among the people, perhaps, who least use the Library and yet who would be much profited by so doing, are the agriculturists. We have a number of good modern treatises on all or most of the departments in which they are interested, and a large amount of literature is received from the various American agricultural experiment stations.

I have the honor to be, Sir,
Your most obedient servant,
HARRY PIERS,
Curator and Librarian.

I remain, Sir,
Your obedient servant,
E. GILPIN, JR.,
Deputy Commissioner of Public Works and Mines and Inspector of Mines.

ERRATA.

Memo. of Barytes mined by Eastern Milling Co. during season 1903:

Cape Rouge, Inverness Co., C. B	200 tons.
Lake Ainslie, Inverness Co.	500 “

Page 57, 33rd line, after “surface” should be added, “according to the Company's mine plan.”

Page 62, 2nd line, “breciated” should be “brecciated.”

Page 63, 8th line, “Ostermoor” should be “Overstrom.” On same page, 5th line, “Florry” should be “Flory.”

Page 64, 20th line, “Leary” should be “Seary.”

LIST OF MINERAL LEASES (OTHER THAN GOLD.)

IRON.

No. of Lease.	Name of Owner.	County.	Agent or Owner.	Address.
247	McNeil, Hector F., et al	Cape Breton	H. F. McNeil	Lorway Mines, C. B.
191, 197	McVicar, John, est. of	"	A. G. McLean	Sydney, N. S.
289	Greener, John, est. of, et al.	"	Isabella Watson	North Sydney, N. S.
292	Smith, Wiley	"	Wiley Smith	Halifax, N. S.
258, 259, 260	MacPherson, M. A., Rev	"	M. A. McPherson.	Little Bras d'Or, C. B.
47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 87, 93/44	Bartlett, James H.	Pictou	J. H. Bartlett	Middlesborough, Ky., [U. S. A.
68, 71, 83, 70	N. S. Steel & Coal Co.	"		New Glasgow, N. S.
61	Cameron, John A., et al	"	J. A. Cameron	St. Paul's, E. R'r, Pictou, [N. S.
10	Fraser, R. P., et al	Inverness	R. P. Fraser	Pictou, N. S.
57	Cape Breton Iron Co. Ltd.	"	R. Drummond	Stellarton, N. S.
99	Fraser, William A	"	W. A. Fraser	
7	McDonald, Lauchlin	Antigonish	L. McDonald	Antigonish, N. S.
8, 9, 10, 11	Cowlam, Geo. B., et al	"	C. B. Whidden	" "
16	Workingmen's Prospecting, Develop'g & Mng. Co. Ltd.	"	J. W. Keith	New Glasgow, N. S.
296	Hamilton, A. G., et al.	Cape Breton	A. G. Hamilton	North Sydney, N. S.
310	C. B. Coal, Iron & Ry. Co., Ltd	"	Neil Ferguson	Sydney, N. S.
19	Copeland, John D	Antigonish	J. D. Copeland	Antigonish, N. S.

14, 17, 18	Wilkie, C. N.	Antigonish	C. N. Wilkie	Antigonish, N. S.
1, 2	N. S. Steel & Coal Co.	Guysborough		New Glasgow, N. S.
232, 257	Brookman, S. J., est., et al.	Cape Breton.	E. W. Moseley.	Sydney, N. S.
1	Smith, W. H., est., et al.	Hants.	M. B. Smith.	Halifax, N. S.
12	Matheson, Joseph.	Richmond	Joseph Matheson	L'Ardoise, C. B.
311	Burchell, John E.	Cape Breton.	J. E. Burchell	Sydney, N. S.
7	Curry, Nathaniel, et al.	Colchester	T. S. Rogers	Amherst, N. S.
	COPPER, LEAD, ETC.			
6	Jenkins, T. K., est., et al	"	Eastern Trust Co	Halifax, N. S.
126	Matheson, Alex	Cape Breton.	A. Matheson.	Sydney, N. S.
286, 287, 70/95, 106, 250	Cape Breton Copper Co	"	Isaac P. Gragg	
181	Burchell, John E.. et al.	"	J. E. Burchell	Sydney.
218	MacKenzie, John A., et al.	"	J. A. McKenzie	Sydney.
277	McInnis, Hector	"	H. McInnis	Halifax, N. S.
6	McLennan, John S.	Victoria	J. S. McLennan	
5	Colonial Copper Co.	Colchester.	F. W. Hanright	Halifax, N. S.
58, 59, 62, 102, 103	Inverness Mining Co., etal.	Inverness.	J. W. Regan.	" "
55	Cheticamp Gold Mng. Co	"	Jas. Harrison	" "
5, 16	Fraser, John H	Antigonish	J. H. Fraser	New Glasgow, N. S.
12	McDonald, John H.	"	J. H. McDonald	Sherbrook, N. S.
13	McDonald, A. K., et al.	"	A. K. McDonald	South River, Antig. Co.
88	Holmes, S. H.	Pictou	S. H. Holmes	Halifax N. S.
3	Simpson, H. O., et al.	Halifax.	H. O. Simpson.	Dartmouth, N. S.
139	McPherson, W. A.	Cumberland.	W. A. McPherson	Pugwash, N. S.
4	Cameron, John J.	Antigonish	J. J. Cameron, M. D.	Antigonish N. S.
94	Pray, Henry C.	Pictou		
2, 3	Franklyn, Geo. E., et al.	Colchester	Geo. E. Franklyn	Halifax, N. S.

LIST OF MINERAL LEASES (OTHER AN ed.)

COPPER, LEAD, ETC.

No. of Lease.	Name of Owner.	County.	Agent or Owner.	Address.
135A	McKenzie, Roderick	Cape Breton	Rod. McKenzie.	Sydney, N. S.
142	LeCras, Henry	“	Henry LeCras	Sydney, N. S.
145	McLean, John	“		
89	Creelman, Wm. et al	Pictou	Wm. Creelman.	Truro, N. S.
9, 10	Carre, Frederick E.	Victoria	F. E. Carre	North Sydney, N. S.
	COAL.			
83, 84, 85	Barton, A. McG., est	Pictou	Wm. Roche, M. P.	Halifax, N. S.
3/1, 1/23, 2/42, 3, 4, 69, 95	Acadia Coal Co.	“	Acadia Coal Co.	Stellarton, N. S.
5/12, 6/13, 7/14, 66	Intercolonial Coal Mng. Co.	“		Westville, N. S.
46, 8/6	N. S. Steel and Coal Co.	“		New Glasgow, N. S.
10/24	Richey, M. H.	“	M. H. Richey	Halifax, N. S.
11/11, 45, 9/10	Gray, B. G., est., et al.	“	Victor G. Gray.	Montreal, P. Q.
22/51, 56, 104, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168	Canada Coals and Ry. Co.	Cumberland	F. Burrows	Joggins Mines, N. S.

66, 67, 68, 69, 19/44, 16/6, 17/7, 18/8, 20/52, 21/55, 61, 61A, 62, 71, 72, 73, 75, 76, 77, 80, 82, 83, 84, 89, 90, 108, 110, 111, 112, 113, 114, 115, 117, 121, 122, 123, 124, 89, 66, 67, 68, 69, 125A, 126, 128, 129, 135, 137, 138, 58, 59, 60, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 94	Cumberland Railway & Coal Co.,	Cumberland	J. R. Cowans	Springhill, N. S.
8/5	Smith, John T.	"	J. T. Smith	Nappan, N. S.
134	Givan, F. W., et al	"	....	
6/12	Mitchell, David.	"	David Mitchell	Maccan, N. S.
140, 141	Prospect Coal Mng. Co.	"	James Kennedy	St. John, N. B.
9/22, 10/23, 11/28, 12/29, 13/30	Styles Mining Co.	"	C. J. Stewart	Halifax, N. S.
23/53	Strathcona Coal Co.	"	H. A. Borden	Moncton, N. B.
57	Salt Springs Coal Co	"	....	
26/16	Minudie Coal Co.	"	....	
86	Rutherford, John	"	....	
131	Hickman, J. S., estate	"	Townshend & Rogers	Amherst, N. S.
125	Francklyn. Geo. E.	"	G. E. Franklyn	Halifax, N. S.
24/47, 25/9	Boston Coal Mng. Co.	"	....	
94A	Ripley. Enoch, et al	"	E. Ripley	
42/52 49/53	Montgomery-Moore, A G, et al	Cape Breton.	....	
1/27, 2, 3, 28, 29, 30	N. S. Steel & Coal Co.	"	....	New Glasgow, N. S.

LIST OF MINERAL LEASES (OTHER THAN GOLD.)—(

COAL.—(*Continued.*)

No. of Lease.	Name of Owner.	County.	Agent or Owner.	Address.
173, 58/67. 298, 299, 300, 301, 303, 302, 304, 305, 306, 307	Weatherbe, Robert L.	Cape Breton.	R. L. Weatherbe	Halifax, N. S.
111, 164	Sydney Coal Co.	"	A. G. Hamilton	North Sydney, N. S.
45/5. 46/28, 47/29, 50/40 51/41, 52/42, 60/54, 61/55, 62/56, 63/57, 64/58, 65/59, 66/60, 67/61, 68/62, 69/63, 108, 109, 110, 188, 207, 140, 252, 253, 254, 255, 256, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 274, 278, 279, 280, 162, 239, 240	Dominion Coal Co.	"		Glace Bay, C. B.
290	McDonald, Alex.	"	Alex. McDonald	Salem Road, C, B.
117, 246	Hamilton, A. G.	"	A. G. Hamilton	North Sydney, N. S.
214, 220	Cayley Hugh St. Q.	"	Borden, Ritchie & Co	Halifax, N. S.
179, 180, 168, 190, 208, 223, 284	Roberts, Frank	"	F. Roberts	"
130	Bennett, Samuel C.	"	S. C. Bennett	

212, 128, 131, 129, 134, 135, 139, 144, 219	Moseley, E. T., est	"	E. W. Moseley	Sydney, N. S.
203, 224	White, Alonzo J	"	A. J. White	Halifax, N. S.
141, 177, 213, 244, 112, 113, 114, 115, 116, 118, 283	Cumberland Railway & Coal Co	"	J. R. Cowans	Springhill, N. S.
146, 193, 194, 216, 235, 312, 313, 314, 315	Lowrie & Blockhouse Collieries, Ltd	"	J. T. Burchell	Port Morien, C. B
160, 170, 183, 297	McVey, James	"	Jas. McVey	Reserve Mines, C. B.
178	Routledge, Ellen, et el	"	E. Routledge	Sydney, N. S.
165	Stephens, L. H. et al	"	L. H. Stephens	"
163, 185	Hamilton, C. F., est	"	A. G. Hamilton	North Sydney, N. S.
291	McCuish, D. A., et al	"	D. A. McCuish	Salem Road, C. B.
243, 171, 174	Gorham, J. W	"	J. W. Gorham	Halifax, N. S.
136, 138, 184, 199, 211, 236	Atlantic Coal Co	"	A. C. Ross	North Sydney, N. S.
232, 257	Brookman, S. J., est	"	E. W. Moseley	Sydney, N S.
282, 308, 309	Moseley, E. W	"	"	"
285	McGowan, John	"	John McGowan	"
293, 294	Macpherson, Rev. M. A	"	M. A. Macpherson	Little Bras d'Or, N. S.
233	Burchell, J. T., et al	"	J. E. Burchell	Sydney, N. S.
186, 187, 202, 205, 206, 209	Kennelly, D. J	"	D. J. Kennelly	
210	Harold, T. C	"	T, C. Harold	Sydney, N. S.
196, 222, 237, 161	Routledge, Thomas	"	T. Routledge	"
201, 221	Hickey, Cornelius	"	C. Hickey	"
192, 215, 217, 226, 229, 234, 281, 295	Cape Breton Coal, Iron and Ry. Co., Ltd	"	Neil Ferguson	"
175	McDonald, Joseph	"	Joseph McDonald	"
182, 200, 225	Cossitt, G. G., et al	"	G. G. Cossitt	"
167	Murray, John	"	Rev. John Murray	Clifton, P. E. I.
295	McVicar, John, est	"	A. G. McLean	Sydney, N. S.

LIST OF MINERAL LEASES (O

COAL.—(*Continued.*)

NUMBER OF LEASE	NAME OF OWNER.	COUNTY.	AGENT OR OWNER.	ADRDESS.
218	Morrison. Donald	Cape Breton	D. Morrison	Sydney, N. S.
248	McMillan, John, et al	"	A. E. Reid	Merrickville, Ontario.
275, 276	Petrie, Louis A	"	L. A Petrie	Glace Bay, N. S.
1/13, 6/4, 7/10, 19, 20, 26, 29, 30, 111, 112, 113	Port Hood Coal Co	Inverness	Wm. [illegible]gow	Halifax, N. S.
125, 126	C. B. Expl. Coal & Dev. Co.	"	[illegible]n	Toronto, Ontario.
231	Owen, J. M., et al	Cape Br	[illegible]	Bridgewater, N. S.
1/2	C. B. Coal Mng. Co	Victoria	J. T. Burchell	Sydney, N. S.
7, 8	Dominion Coal Co	"		Glace Bay, C. B.
8, 9, 106, 107, 114, 115, 116, 117, 118, 119, 120, 121	Mabou Coal Mng Co	Inverness	J. B. Cann	Mabou, N. S.
11	Dawson, Geo., et al	"	Geo. Dawson	Providence, R. I.
15, 18, 23, 24, 25, 28, 27, 40, 41, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 60, 61, 100, 101, 104, 105, 123, 127, 130, 3/11	Inverness Ry. & Coal Co., Ltd	"	J. L. Brass	Broad Cove, C. B.
128, 129	National Trust Co	"	J. L. Brass	Broad Cove, C. B.
124	Gorham, J. W., et al	"	J. W. Gorham	Halifax, N. S.
35, 38, 39	Ross, Wm., et al	"	Hon. Wm. Ross, M.P.	Halifax, N. S.

43, 44	Farquhar, J. A., et al	"	Wm. Roche, M. P.	"
31	Sutherland, W. A., et al	"	Edward Harris	Westville, N. S.
32, 33, 34, 42	Wallace, C. M., et al	"	T. A. Wallace, M. D.	Halifax, N. S.
63, 64, 65, 96, 97, 98	Taylor, Ira	"	Wm. Roche, M. P.	"
66, 108, 109	Lithgow, J. R.	"	J. R. Lithgow	"
67, 68	McDonald, W. B.	"	Wm. Roche, M. P.	"
69	McInnis, Hector, et al	"	H. McInnis	"
70, 71, 72, 77, 78, 79, 80	Roche, William	"	Wm. Roche, M. P.	"
73, 74, 75, 76	Townsend, Silas, est.	"	" "	"
81, 110	Caldwell, Thomas, et al	"	T. Caldwell	"
82, 85, 88	Andrews, J. W.	"	J. W. Andrews	New York, U. S. A.
84, 83, 86, 87, 88, 90, 91, 92, 93, 94, 95	Herman, Chas. E.	"	Wm. Roche, M. P.	Halifax, N. S.
34	Ross, Wm., et al	Richmond	Hon. Wm. Ross	"
7, 8	Terminal City Co.	"		
5, 36	N. Am. C. & D. Co., Ltd.	"		
3	Reynolds, W. K., et al	"	W. K. Reynolds	Halifax, N. S.
37, 11	Eastern Development Co.	"	Isaac P. Gragg	
17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33	Pearl, H. M.	"		
35	Dominion Coal Co.	"		Glace Bay, C. B.
6	Jenkins, T. K., est.	Colchester	Eastern Trust Co.	Halifax, N. S.
15	Corbett, John E., et al	Antigonish	J. E. Corbett, M.L.C.	Harbor Au Bouche, N.S.

COAL.—Sales.

Names.	1st Quarter.	2nd Quarter.	3rd. Quarter.	4th Quarter.	Year 1903.	Year 1902.
Nova Scotia:						
Land Sales.....	143,494	146,531	141,322	113,738	545,085	580,616
Sea Borne......	307,435	242,633	247,611	262,713	1,060,392	801,947
Total N. S.....	450,929	389,164	388,933	376,451	1,605,477	1,382,563
New Brunswick..	92,414	102,456	93,347	88,505	376,722	319,338
Newfoundland...	33,456	25,577	33,127	41,002	133,162	105,287
P. E. Island......	24,017	30	30,221	24,204	78,472	56,203
Quebec	282,941	177,769	417,723	525,483	1,403,916	1,243,980
West Indies ...	......	......	......	......	......	5,982
United States....	300,758	302,925	208,414	156,735	968,832	751,382
Other Countries..	15,663	7,709	15,440	15,681	54,493	33,891
Total ,... ...	1,200,178	1,005,630	1,187,205	1,228,061	4,621,074	3,898,626

COAL—General Statement.

1903.	Produce.	Sales.	Colliery Consumption.	
			Engines.	Workmen.
1st Quarter........................	1,420,310	1 200,178	90,818	14 118
2nd "	1,266,252	1,005,630	89,628	26,995
3rd "	1,281,608	1,187,205	78.536	18,296
4th "	1,277,077	1,228,061	134,064	16,094
Total........................	5,245,247	4,621,074	393,046	75,503

TABLE A—COAL TRADE BY COUNTIES FOR THE YEAR ENDED SEPTEMBER 30TH, 1903.

	CUMBERLAND.		PICTOU.		CAPE BRETON.		OTHER COUNTIES.		TOTAL.	
	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.
1st Quarter..	154,530	142,262	171,426	154,626	1,042,759	861,966	51,595	41,324	1,420,310	1,200,178
2nd "	148,432	139,468	174,639	150,037	898,309	689,561	44,872	26,564	1,266,252	1,005,630
3rd "	148,341	128,292	183,656	158,444	888,926	847,018	60,685	53,451	1,281,608	1,187,205
4th "	142,172	121,899	168,022	156,130	889,406	881,360	77,477	68,672	1,277,077	1,228,061
Total.........	593,475	531,921	697,743	619,237	3,719,400	3,279,905	234,629	190,011	5,245,247	4,621,074

PRODUCTION AND SALES

YEAR ENDED SEPTEMBER , 1903.

COLLIERY.	PLACE.	Production.	Sales.	Colliery Consumpt	
				Engines.	Workmen.
Maritime Coal Co.	Chignecto	16,107	12,493	3,058	353
Fundy Coal Co.	Fundy	1,953	1,240	369	157
Canada Coals & Railway Co.	Joggins	52,160	38,768	11,449	1 503
Minudie Coal Co.	Minudie	32,241	29,068	2,092	681
Ripley & Blenkhorn	Scotia	442	296	70	36
Cumberland Railway & Coal Co	Springhill	500,572	450,056	31,247	16,221
Acadia Coal Co.	Westville and Stellarton	397,449	3[illegible]	43,039	6,907
Intercolonial Coal Mining Co	Drummond	249,448	226,221	16,565	4,282
N. S. Steel & Coal Co.	Marsh	50,846	46,384	3,512	40
Dominion Coal Co	Dominion	3,283,117	2,900,004	219,050	30,315
Gowrie and Blockhouse Collieries		26,192	22,338	1,782	786
N. S Steel & Coal Co.	Sydney Mines	397,366	345,492	32,401	7,786
Sydney Coal Co	Indian Cove	12,725	12,071	84	199
Cape Breton Coal Mining Co.	New Campbellton	8,748	4,883	2,880	1,270
Port Hood Coal Co	Port Hood	74,518	65,631	4,544	1,433
Mabou Coal Mining Co	Mabou	6,124	107	3,474	263
Inverness Railway & Coal Co	Inverness	145,239	119,390	17,430	3,271
Total		5,255,247	4,621,074	393,046	75,503

TABLE B—COAL TRADE BY COUNTIES.

	CUMBERLAND.	PICTOU.	CAPE BRETON.	OTHER COUNTIES.	TOTAL.
Nova Scotia—By land	90,485	231,998	153,657	44,305	520,445
By sea	24,640	82,085	919,775	58,532	1,085,032
Total	115,125	314,083	1,073,432	102,837	1,605,477
New Brunswick	222,458	54,286	88,669	11,309	376,722
Newfoundland	....	....	128,916	4,246	133,162
P. E. Island	....	40,751	28,451	9,270	78,472
Quebec	82,668	119,552	1,161,771	39,925	1,403,916
West Indies	....	....	....	....	....
United States	111,670	89,583	745,155	22,424	968,832
Other Countries	....	982	53,511	....	54,493
Total	531,921	619,237	3,279,905	190,011	4,621,074

Statement of Number and Classes of Men Employed, etc., at each Mine during the year ended

COLLIERY.	UNDERGROUND.				ABOVE GROUND.				CONSTRUCTION.				TOTAL.		I,		
	Skilled Labor.	Laborers.	Boys.	Days' Labor.	Skilled Labor.	Laborers.	Boys.	Days' Labor.	Skilled Labor.	Laborers.	Boys.	Days' Labor.	Persons.	Days' Labor.	Above.	Below.	Days.
Chignecto	14	6	2	6545	3	10	1	4067	9	10	....	7552	55	18564	1	....	231
Fundy	5	1	....	2332	4	1	....	1749	2	....	....	540	13	4621	...	....	185
Joggins	82	87	16	55243	9	79	13	32295	....	....	...	....	286	87538	7	9	298
Minudie	38	18	2	13447	10	17	2	6326	1	....	...	162	88	19935	1	....	281
Springhill	530	430	119	282009	130	195	50	134365	.....	....	....	....	1454	416374	24	47	262
Acadia	330	409	69	197534	60	220	32	92867	.....	....	....	....	1120	290401	23	34	299
Intercolonial	266	152	68	118113	59	124	17	52449	4	12	....	5420	702	175982	14	23	298
Marsh	36	37	9	20946	11	14	1	7745	....	....	...	....	108	28691	2	....	283
Dominion	1400	1933	290	1079689	407	490	40	318543	231	...	....	70947	4791	1469179	67	485	300
G. & B. House	35	25	8	19040	13	15	6	9520	5	13	....	5080	120	33640	2	...	280
Sydney Mines	766	136	49	226268	182	254	24	120715	106	9	....	25552	1526	372535	14	110	296
Indian Cove	25	14	....	8235	2	6	....	1837	....	...	....	....	47	10072	....	....	287
New Campbellton	16	13	3	4004	11	....	...	1476	34	....	...	5185	77	10675	...	....	125
Port Hood	71	80	9	60510	12	49	6	26260	8	....	...	3045	235	89815	5	6	219
Mabou	26	19	....	13195	14	21	1	10116	16	6	2	7128	105	30439	41	....	292
Broad Cove	124	76	25	80500	25	100	15	55000	....	....	....	....	365	135500	6	12	280
	3764	3436	669	2188020	952	1595	208	875330	416	50	2	130611	11092	3193961	207	726	

Expenditure of Coal Mines of Nova Scotia for Year ended September 30th, 1903.

Name.	Shafts.	Slopes.	Levels.	Machinery.	Colliery Buildings.	Dwellings.	Wharves.	Prospecting.	Railways.	Miscellaneous.	Total.
Chignecto	....	$23327	$ 1125	$ 18346	$ 1153	$12101	....	....	$ 1701	....	$ 57753
Fundy	534	6014	581	607	816	....	....	....	119	....	8671
Joggins	....	....	....	2319	....	....	....	....	....	....	2319
Minudie	624	398	1456	652	125	200	....	50	....	....	3505
Springhill	....	....	....	40000	....	....	....	....	....	10000	50000
Acadia	....	....	....	3512	806	13072	....	....	....	....	17390
Intercolonial	....	....	744	14378	3255	....	$ 60676	....	36430	583	116066
Marsh	....	4762	3109	....	....	250	....	....	....	....	8121
Dominion	....	....	....	....	....	....	....	....	....	....	....
Gowrie aud Blockhouse	1614	....	7237	4182	560	....	313	....	....	3010	16916
Sydney Mines	....	....	....	45138	13839	11700	77290	1240	69049	38850	257106
Indian Cove	....	....	....	....	....	....	....	....	....	....	....
New Campbellton	....	6777	1000	....	....	....	....	....	....	....	7777
Port Hood	....	....	9741	....	860	....	8631	3424	....	....	22656
Mabou	....	8392	6564	27845	6000	9960	....	....	....	1000	59761
Broad Cove	....	....	....	....	....	....	....	....	....	....	....
Total	$2772	$49670	$31557	$156979	$27414	$47283	$146910	$4714	$107299	$53443	$628041

COAL.

NOVA SCOTIA EXPORTED TO THE UNITED STATES

	Tons.	Duty.	Years.	Tons.	Duty.
	118173	24 ad.	1877	118216	75
	116274	"	1878	88495	"
	87542	"	1879	51641	"
	120764	"	1880	123423	"
	139125	Free.	1881	113728	"
	103222	"	1882	99302	"
	126152	"	1883	102755	"
	123335	"	1884	64515	"
	186743	"	1885	34483	"
	122720	"	1886	66003	"
1860	149289	"	1887	73892	"
1861	204457	"	1888	30198	"
1862	192612	"	1889	29986	"
1863	282775	"	1890	50854	"
1864	347594	"	1891	25431	"
1865	465194	"	1892	13883	"
1866	404252	"	1893	16099	"
1867	338492	$1.25	*1894	79837	40
1868	228132	"	†1895	73097	"
1869	257485	"	‡1896	174919	"
1870	168180	"	‖1897	106279	67
1871	165431		1898	98027	"
1872	154092	75	1899	153188	"
1873	254760	"	1900	624273	"
1874	138336	"	1901	590086	"
1875	89746	"	1902	751382	"
1876	71634	"	1903	968832	"

NOTE.—The quantities given for the years 1852 to 1872 are on the authority of the Board of Trade, Philadelphia, and are probably under-estimated.

*Nine months only.

†NOTE.—After August 1st, 1894, duty on Round Coal 40 cents, on Culm or Slack 15 cents.

‡Fiscal year begins October 1st, and ends Sept. 30th. (Cap. 4, Acts 1893).

‖On July 24th, 1897, the duty was made 67 cents.

GENERAL GOLD STATEMENT.

Year Ended Sept. 30th, 1903.

District.	Tons Crushed.	Total Yield of Gold.			Average Yield of Gold Per Ton.		
		Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.
Stormont	20331	3094	1	12		3	1
Sherbrooke	19221	3820	12	12		3	23
Renfrew	610	1717	2	12	2	16	7
Wine Harbor	4048	1412	8	11		6	23
Leipsigate	7861	2009	18	9		5	3
Harrigan Cove	1613	1091	10	15		13	12
North Brookfield	10143	2872	11	0		5	16
Waverly	7795	1853	14	16		4	18
Caribou	11961	3653	3	8		6	3
Oldham	712	419	8	23		11	19
Uniacke	1390	893	2	22		12	20
Lake Catcha	677	472	11	8		13	23
Kemptville	411	205	13	0		10	0
Other Districts	5872	1682	5	14		5	18
Total	92645	25198	4	18		5	11

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.

Month.	Stormont.					Sherbrooke.				
	No. of Mines.	Tons Crushed.	Yield of Gold.			No. of Mines.	Tons Crushed.	Yield of Gold.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October	3	2856	618	5	12	2	1369	524	......	......
November	2	2915	483	......	......	2	1558	529	6	......
December	2	2685	329	6	......	2	1949	540	4	......
January	2	2206	485	......	......	2	2293	400	......	......
February	2	880	281	14	......	2	1469	231	4	......
March	1	370	136	12	......	1	950	78	......	......
April	1	325	95	4	......	1	452	55	......	......
May	1	320	116	15	......	2	2303	197	8	12
June	1	320	119	......	......	2	1566	374	1	......
July	1	327	94	8	......	2	1716	353	7	......
August	1	286	52	......	......	2	1945	331	17	......
September	3	6741	282	17	......	2	1651	206	5	......
Total		20331	3094	1	12		19221	3820	12	12

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	RENFREW.					WINE HARBOR.				
	No. of Mines.	Tons Crushed.	YIELD OF GOLD.			No. of Mines.	Tons Crushed.	YIELD OF GOLD.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October	1	35	152	10	......	1	250	61	......	......
November	2	149	313	7	......	1	250	63	......	......
December	1	31	5	5	12	3	397	157	......	......
January	1	65	290	......	......	2	355	105	12	......
February	1	50	206	......	......	2	355	104	13	......
March	1	40	193	......	......	2	363	111	3	......
April	1	35	156	......	......	2	350	122	......	......
May	1	50	210	......	......	3	270	70	...10	......
June		No	Crushing.			3	397	199	10	4
July	1	50	96	......	......	3	446	126	......	7
August	1	40	39	......	......	3	230	133	......	......
September	1	65	56	......	......	3	385	159	......	......
Total		610	1717	2	12		4048	1412	8	11

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.—*Continued.*

MONTH.	*LEIPSIGATE.					HARRIGAN COVE.				
	No. of Mines.	Tons Crushed.	YIELD OF GOLD.			No. of Mines.	Tons Crushed.	YIELD OF GOLD.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October	1	50	47	......	......	1	110	93	......	......
November	....	No	Crushing.			1	117	129	10	......
December	....	No	Crushing.			2	107	124	5	15
Jannary	1	400	175	8	9	1	113	85	10	......
February	1	286	127	10	......	1	118	101	......	......
March	1	400	196	......	......	1	93	96	......	......
April	1	322	60	5	......	2	163	121	......	......
May	2	475	178	10	......	1	95	82	......	......
June	1	2348	540	14	......	2	155	30	5	......
July	1	1331	326	......	......	2	125	65	5	......
August	1	797	64	11	......	2	202	79	10	......
September	1	1452	294	......	......	2	215	84	5	......
Total	....	7861	2009	18	9	....	1613	1091	10	15

*LEIPSIGATE.—Of 7811 tons mentioned as crushed, 3305 tons were tailings treated by Cyanide Process.
Mint returns show that the gold from the 7811 tons above mentioned contained 281 ozs., 12 dwt., 19 grs. of silver.

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.—*(Continued.)*

Month.	Caribou.					Oldham.				
	No. of Mines.	Tons Crushed.	Yield of Gold.			No. of Mines.	Tons Crushed.	Yield of Gold.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October	4	1109	461	11	......	1	100	61	......	......
November	6	1312	388	4	12	1	3	......	16	......
December	4	1077	254	17	......	2	204	135	3	18
January	2	649	277	......	......	1	40	6	6	5
Feburary	1	644	265	......	......		No	Crushing.		
March	2	846	350	7	......	1	20	2	2	......
April	3	1244	462	11	2	1	96	52	12	......
May	4	843	204	12	......	1	37	44	2	......
June	4	1014	295	19	19	1	30	10	......	......
July	3	1293	218	1	12	1	109	79	16	......
August	3	1092	253	5	20		No	Crushing.		
September	3	838	221	13	15	1	73	27	11	......
Total	....	11961	3653	3	8	....	712	419	8	23

MONTHLY STATEMENT FOR EACH

Month.	North Brookfield.					Waverly.				
	No of Mines.	Tons Crushed.	Yield of Gold.			No. of Mines.	Tons Crushed.	Yield of Gold.		
			Ozs.	Dwt.	Grs			Oz.	Dwt.	Grs.
October	1	807	336	......	......	2	1039	318	13	16
November	1	1067	163	......	......	2	911	293	13	18
December	1	788	187	......	......	2	585	136	10	......
January	1	690	264	11	......	1	820	240	......	......
February	1	1190	163	7	......	1	850	185	15	......
March	1	874	272	......	......	2	936	221	11	......
April	1	838	283	......	......	1	781	187	10	......
May	1	974	183	......	......	1	10	3	1	......
June	1	702	281	......	......	2	1640	165	5	......
July	1	858	237	18	......		} No	Crushing.		
August	1	670	257	15	......					
September	1	685	244	......	......	3	223	101	15	6
Total	....	10143	2872	11	......	....	7795	1853	14	16

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	UNIACKE.					LAKE CATCHA.				
	No. of Mines.	Tons Crushed.	YIELD OF GOLD.			No. of Mines.	Tons Crushed.	YIELD OF GOLD.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October	4	333	156	12	22	2	127	92	15	14
November	3	193	125	8	......	2	170	123	17	19
December	1	15	5	4	......	2	97	76	18	1
January	2	210	148	6	2	2	68	43	1	15
February	1	76	80	10	......	2	70	42	10	7
March	1	40	21	16	......	1	20	13	12	......
April	1	35	15	17	......	1	4	4	10	......
May	1	96	101	15	......	1	26	15	18	11
June	3	29	26	10	16	2	45	30	12	13
July	2	105	73	10	......	2	36	13	1	......
August	2	152	74	18	6	1	5	2	14	......
September	2	106	62	15	......	1	9	13	0	......
Total	....	1390	893	2	22	....	677	472	11	8

MONTHLY [illegible] FOR EACH [illegible]

[illegible]	[illegible]
[illegible]	[illegible]
December	[illegible]
January	[illegible]
February	[illegible]
March	[illegible]
April	[illegible]
May	[illegible]
June	[illegible]
July	[illegible]
August	[illegible]
September	[illegible]
Total	[illegible]

INTERCOLONIAL RAILWAY.

Statement showing the various kinds of coal received from the different mines in Nova Scotia for use of the Intercolonial Railway from October 1st, 1902, to September 30th, 1903.

MONTHS	Dominion Coal Co., Sydney.	Nova Scotia Steel & Coal Co., New Glasgow.			Inverness Ry. & Coal Co., Inverness.		Intercolonial Coal Co., Westville.			Acadia Coal Company, Stellarton.				Cumberland Ry. & Coal Co., Springhill.				Maritime Coal Co., Maccan	E. Ripley & Co., Maccan	Strathcona Coal Co., R. Hebert		Minudie Coal Co., Riv. Hebert	Can. Coal & Ry. Co., Joggins	
	Round	Round	R. of Mine	Slack	Round	R. of Mine	Round	R. of Mine	Slack.	Round	R. of Mine	Slack	Culm	Round	R. of Mine	Slack	Culm	Round	Round	Round	R. of Mine	Round	Round	R. of Mine
1902.																								
October	1161	98	291	......	113	2652	......	3271	......	266	6622	121	....	421	2911	147	....	......	......	....	111	18	....	..
November	27	207	178	......	490	2049	.....	2335	......	211	6850	44	....	285	5500	19	....	......	......	19	......	......	102	..
December	......	1419	......	......	378	1098	2387	1144	42	3091	1662	135	....	4510	2430	223	....	......	......	20	......	479	77	..
1903.																								
January	.....	2155	......	......	1677	....	5245	......	43	7787	39	100	....	8783	4848	409	18	......	......	111	......	457	341	..
February	......	695	......	38	1811	....	5316	......	......	4872	115	111	6	6384	10871	19	....	19	......	127	......	854	96	..
March	1031	814	......	......	3883	....	8631	...	......	4868	.....	131	48	6325	9335	104	....	62	41	690	.....	1280	294	31
April	2101	2068	......	......	2648	....	9341	.....	......	7844	......	111	34	5625	3012	456	....	460	.....	608	21	1224	102	..
May	2402	2900	....	.....	2804	....	3868	....	......	5261	......	87	24	5891	2809	203	....	563	18	424	20	1278	994	..
June	2749	3700	......	......	1789	....	1752	.....	......	8753	......	15	12	5950	5100	490	....	1107	21	360	163	1271	1250	..
July	3341	950	......	......	2521	....	1309	124	......	5357	.....	144	....	4262	2898	255	....	1538	.....	485	287	1151	1069	..
August	1453	304	......	......	2443	....	1047	......	.....	8137	.....	68	....	3573	655	212	....	1603	......	461	304	840	634	..
September	762	1276	......	....	2716	....	2098	.....	......	7776	.....	76	6	3559	105	84	....	1530	......	516	357	891	828	..
Total, including fractions	15028	16592	469	38	23279	5800	40998	6875	86	64227	15290	1147	130	55574	50481	2627	18	6885	80	3827	1154	9847	5787	31

MONTHLY STATEMENT FOR EACH G

Month.	Kemptvlle.					rs.				
	No. of Mines.	Tons. Crushed.	Yield of Gold.			No. of Mines.	Tons Crushed.	Yield of Gold.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October	1	175	97	5	......	3	552	181	4	12
November	1	100	46	15	......	3	450	222	17	......
December	1	75	33	......	......	2	123	36	7	16
January		No	Crushing.			3	129	45	4	3
February		No	Crushing.			3	2250	611	10	......
March		No	Crushing.			3	243	98	11	1
April	1	24	12	15	......	3	300	108	1	......
May		No	Crushing.			2	195	36	2	......
June	1	12	5	15	......	2	128	22	16	......
July	1	25	10	3	......	1	110	27	8	......
August		No	Crushing.			4	678	130	2	6
September		No	Crushing.			4	714	162	2	......
Total	....	411	205	13	......	....	5872	1682	5	14

INTERCOLONIAL RAILWAY.

Statement showing the various kinds of coal received from the different mines in Nova Scotia for use of the Intercolonial Railway from October 1st, 1902, to September 30th, 1903.

MONTHS	Dominion Coal Co., Sydney.	Nova Scotia Steel & Coal Co., New Glasgow.			Inverness Ry. & Coal Co., Inverness.		Intercolonial Coal Co., Westville.			Acadia Coal Company, Stellarton.				Cumberland Ry. & Coal Co., Springhill.				Maritime Coal Co., Maccan	E. Ripley & Co., Maccan	Strathcona Coal Co., R. Hebert		Minudie Coal Co., Riv. Hebert	Can. Coal & Ry. Co., Joggins	
	Round	Round	R. of Mine	Slack	Round	R. of Mine	Round	R. of Mine	Slack.	Round	R. of Mine	Slack	Culm	Round	R. of Mine	Slack	Culm	Round	Round	Round	R. of Mine	Round	Round	R. of Mine
1902.																								
October	1161	98	291	....	113	2652	....	3271	....	266	6622	121	....	421	2911	147	....	....	....	....	111	18	....	..
November	27	207	178	....	490	2049	....	2335	....	211	6850	44	....	285	5500	19	....	....	....	19	....	....	102	..
December	....	1419	....	....	378	1098	2387	1144	42	3091	1662	135	....	4510	2430	223	....	....	....	20	....	479	77	..
1903.																								
January	....	2155	....	....	1677	....	5245	....	43	7787	39	100	....	8783	4848	409	18	....	....	111	....	457	341	..
February	....	695	....	38	1811	....	5316	....	....	4872	115	111	6	6384	10871	19	....	19	....	127	....	854	96	..
March	1031	814	....	....	3883	....	8631	....	....	4868	....	131	48	6325	9335	104	....	62	41	690	....	1280	294	31
April	2101	2068	....	....	2648	....	9341	....	....	7844	....	111	34	5625	3012	456	....	460	....	608	21	1224	102	..
May	2402	2900	....	....	2804	....	3868	....	....	5261	....	87	24	5891	2809	203	....	563	18	424	20	1278	994	..
June	2749	3700	....	....	1789	....	1752	....	....	8753	....	15	12	5950	5100	490	....	1107	21	360	163	1271	1250	..
July	3341	950	....	....	2521	....	1309	124	....	5357	....	144	....	4262	2898	255	....	1538	....	485	287	1151	1069	..
August	1453	304	....	....	2443	....	1047	....	....	8137	....	68	....	3573	655	212	....	1603	....	461	304	840	634	..
September	762	1276	....	....	2716	....	2098	....	....	7776	....	76	6	3559	105	84	....	1530	....	516	357	891	828	..
Total, including fractions	15028	16592	469	38	23279	5800	40998	6875	86	64227	15290	1147	130	55574	50481	2627	18	6885	80	3827	1154	9847	5787	31

INTERCOLONIAL RAILWAY.

Statement showing the number of Tons of Coal received at the following stations from mines in Nova Scotia during the year ended 30th September, 1903..

Destination.	Tons.	Destination.	Tons.
Halifax	81396	*Brought forward*	419950
Dartmouth	20543	Point Tupper.	125
Waverly	340	Hawkesbury	14
Rockingham	80	McIntyre's Lake	13
Bedford	830	Cleveland	13
Windsor Junction.	21026	West Bay Road	21
Wellington	21	River Denys	20
Enfield	183	Orangedale	127
Elmsdale	733	Iona	654
Milford	14	Grand Narrows	252
Shubenacadie	242	Christmas Island	73
Stewiacke	298	Shenacadie	13
Brookfield	336	Boisdale	71
Truro	17485	Long Island	111
Valley	16	Barrachois	61
West River	34	George's River	399
Glengarry	14	Scotch Lake	218
Hopewell	1518	North Sydney	60
Ferrona Junction	38852	Leitche's Creek	54
Stellarton	10516	Sydney River	247
Westville	69	Debert	20
Sylvester's	273	East Mines	55
New Glasgow	10506	Londonderry	10300
Trenton	88014	Oxford	1542
Pictou Landing	122826	Pugwash	1608
Merigomish	139	Wallace Bridge	21
Avondale	78	Wallace	400
James River	7	Batty's Siding	85
Antigonish	3561	Malagash	102
South River	7	Tatamagouche	409
Pomquet	8	Denmark	185
Heatherton	42	Urquhart's	14
Bayfield	25	River John	479
Tracadie	47	Wilson's	77
Har. au Bouche	54	Meadowville	27
Mulgrave	897	Scotsburn	147
Carried forward	421030	*Carried forward*	438977

INTERCOLONIAL RAILWAY—(*Continued.*)

Destination.	Tons.
Brought forward...	438977
Scotch Hill.	320
Haliburton's	21
Pictou	12116
Athol	14
Maccan	7
Nappan	17
Amherst	29494
Aulac	178
Sackville	6414
Dorchester	2112
College Bridge	1253
Memramcook	127
Shediac	1032
Point du Chene	281
Moncton	18390
Salisbury	2633
Petitcodiac	656
Sussex	1349
Apohaqui	7
Norton	508
Bloomfield	8
Hampton	518
Nauwigewauk	7
Rothesay	259
Coldbrook	77
St. John	77224
Kent Junction	367
Rogersville	36
Chatham Junction	10860
Chatham	516
Millerton	160
Derby Junction	173
Newcastle	66
Gloucester Junction	1810
Bathurst	365
New Mills	17
Dalhousie	326
Campbellton	102
Moffats	16
Matapedia	2285
Carried forward...	611098
Brought forward...	611098
Rimouski	379
Cacouna	20
River du Loup	6147
St. Paschal	21
St. Denis Wharf	219
St. Anne	22
L'Islet	16
Montmagny	76
St. Charles Junction	90
St. Henri Junction	27485
Chaudiere Junction	74
Levis	5611
Villeroy	719
St. Hyacinthe	6845
St. Madeline	37
Beloeil	929
St. Hubert	24
St. Lambert	1225
Montreal	56666
G.T.R. via Chaudiere.	6209
" " Montreal	10818
" St. Hyacinthe	115
C.P.R. " Ste. Rosalie	2521
" " St. John	5462
Total	742828

SUMMARY.

FROM	TONS.
Stellarton	239928
Westville	24649
New Glasgow	111917
Albion	68735
North Sydney	47463
Sydney	11061
Springhill Junction	151000
Maccan	60640
Point Tupper	27435
Total	742828

BOR, LONDONDERRY IRON MINES.

ABOVE GROUND.

D LABOR.	UNSKILLED LABOR.	DAYS' LABOR.
20	20	12,000

UNDERGROUN

59	60	11,500

LABOR, TOBROOK RON MINES.

ABOVE GR D.

ILLED LABOR.	UNSKILLED R.	DAYS' LABOR.
8	6	1,837

UNDERGROUND.

9	14	3,187

CUSTOMS CANADA.

PORT OF WINDSOR.

Memo. of Minerals exported during year ending September 30th, 1903.

	TONS	VALUE
Outport of Cheverie, Gypsum..........	17,114	$9,141
" " Walton, "	6,415	3,829
Port of Windsor, "	146.835	146,835
Total Gypsum..................	170,364	159,805
Windsor moulding sand..................	240	960
and total (Port of Windsor, N. S.)...	170,604	$160,765

PROVINCIAL EXHIBITION.

1903.

ECONOMIC MINERALS

OF

NOVA SCOTIA.

CATALOGUE AND DESCRIPTION.

DEPARTMENT OF PUBLIC WORKS AND MINES.

HALIFAX, N. S.:
THE COMMISSIONER OF PUBLIC WORKS AND MINES,
KING'S PRINTER.
1903.

NOVA SCOTIA MINERALS.

The following brief notes are prepared to accompany the exhibit of Nova Scotia minerals made for the Provincial Exhibition, held at Halifax, September, 1903. Lack of time has prevented as full an exhibit as would be desirable, but it is trusted that it will show the general characters of the better known mineral deposits.

COAL.

CAPE BRETON COAL FIELDS.

Nova Scotia coal is bituminous, and in many cases coking, resembling the coals of the north of England.

In the counties of Inverness and Victoria there are collieries at New Campbellton, Port Hood, Mabou and Broad Cove, working important deposits of coal. These mines, recently opened, are rapidly increasing their output and will soon produce an important per centage of the provincial sales. The coals are abundant in this part of Cape Breton and of good quality, and close to tide water.

The Sydney coal field in the county of Cape Breton has been long known for its excellent steam coals, which are largely used for domestic purposes, coke, gas making, etc. The area of the field, which is not yet fully explored, is about 400 square miles. It contains a number of large seams favorably situated for mining, and is on tide water.

BITUMINOUS COAL. Phalen Seam, Dominion Coal Co's collieries, Glace Bay, C. B. Co.—This company is too well known to require more than a brief account of it and its operations. It operates under a lease of 99 years, the royalty to the N. S. Government for the whole period being fixed at a minimum of 12½ cents per ton, with a minimum gross amount for each year to be paid on at least as many tons as were in 1891 sold by all the mines included in the new company. It has control of the Glace Bay section of the Sydney coal field, where it works the Phalen (8 ft.) and Harbor (6 ft.) seams on a large scale. The following collieries are in operation: Caledonia (Phalen seam), International (Phalen seam), Reserve (Phalen seam), and Dominion Nos. 1 (Phalen seam), 2 (Harbor and Phalen seams), 3 (Phalen seam) and 4. These collieries are up to date in every respect, the pits being supplied with all modern improvements in the way of endless haulage, compressed air for pumps and mechanical coal-cutters, fans, picking tables, etc., and there are also 3 Robinson-Ramsey coal washers, with a combined capacity of 2,000 tons daily. The company's railway connects the mines with the I. C. Railway, the Dom. Steel Co's furnaces, and shipping piers at Sydney Harbour and Louisburg (40 miles of main track). The monthly output for 1902 of Caledonia colliery was 58,000 tons; of International, 25,000; Reserve, 65,000; Dominion No. 1, 60,000. The total output of all the collieries for 1902 was 3,174,227 tons, of which 2,912,311 were shipped. All the seams are worked "room and pillar." The following analyses show the character of the seams of this district:—

	Emery.	Gowrie.	Phalen.	International.
Moisture	.64	.50	.52	.80
Volatile combustible matter	31.10	28.13	34.21	27 55
Fixed carbon	63.10	66.01	59.73	65 90
Sulphur	1.51	1.75	.81	1.45
Ash	3.65	5 36	3.92	4.30

The Phalen seam yields 11 012 cubic ft. of gas per long ton, having an average calorific power of 571.85 B. T. U. and an average illuminating power of 9.9 candles. and with a Welsbach burner 54.34 candles. The total yield of coke was 74.68 per cent.; the ammonium sulphate per ton amounted to 32.91 lbs.; the tar, 12.89 gals; and the benzole .103 gals.

COKE. Made from Dominion Coal Co's coal, at Dominion Iron and Steel Co's ovens, Sydney, C. B. Co.

BITUMINOUS COAL. N. S. Steel & Coal Co.'s colliery, Sydney Mines, C. B. Co.—The Point Aconi and Sydney Mines areas of this company consist of 11,709 acres, which contained in 1871, according to the estimate of R. Brown, 155,000,000 tons of coal; and the Sydney Mines submarine areas of 3,200 acres, which contained in 1871, according to the same authority, 66,000,000 tons of coal. Since that date about 5,000,000 tons have been mined from these areas. The main seam at Sydney Mines is 5 ft. 4 in. thick and is opened by a shaft 690 ft. deep. The workings now extend far beneath the sea, the cover there now being about 1,000 ft. of strata. The company is now opening up two new mines, known as Sydney No. 1 and Sydney No. 2. Slopes have been driven on the former 1,650 ft., and in the latter, 850 ft. The colliery is well equipped and the average output for past four years has been nearly 270,000 tons per annum. The coal is excellent for house use and makes good coke. The following analyses will serve to show the character of the main seam:

Moisture	1.536
Volatile combustible matter	36.362
Fixed carbon	37.008
Sulphur	1.894
Ash	5.084

BITUMINOUS COAL. Gowrie Seam, Gowrie and Blockhouse collieries, Port Morien, C. B. Co.—This company is the successor of the coal syndicate of Newcastle-on-Tyne, and the royalties acquired cover about 8 square miles, embracing several seams of importance. A shaft 205 feet deep has been sunk to the Gowrie seam, and the coal proven to be 5 ft. 2 in. thick and of excellent quality. The shaft level has been driven in and a "stone drift" set away to the new workings, seven acres in extent. On completion endless haulage will be installed. Output in 1902 was 19,597 tons, 14,880 of which were sold.

BITUMINOUS COAL. Cape Breton Coal Mining Co's Colliery, New Campbellton, C. B. Co.—Coal was worked here as early as 1861, but the present owners acquired the property (area of 3 miles), in 1893. A 4 ft. seam is worked; dip, 12°; opened by a slope, 1,800 ft.; worked "pillar and room." Ingersoll coal-cutting machines are used. The colliery is connected by a 3 ft. gauge railway, 1½ miles long, with the shipping wharf at the mouth of the Big Bras d'Or Lake. The output for 1902 was 12,838 tons, of which the colliery consumption was 3,083 tons. The chief market is in Nova Scotia and Newfoundland.

BITUMINOUS COAL. So-called "Conglomerate Seam," Cochran Lake, C. B. Co.—This seam is being prospected by Rev. Mr. Murray. It is peculiar as having a roof of conglomerate.

BITUMINOUS COAL. "No. 3" or "Indian Cove" Seam, Sydney Coal Co., Indian Cove, Sydney Mines, Cape Breton Co.—The seam worked here measures 4 ft. 6 in. in greatest thickness, and is near the base of the coal measures as defined by the geological survey. The coal is won by a tunnel driven on the strike 2,400 feet. Natural drainage and ventiliation. Average yearly output about 8,000 tons (of 2240 lbs) The haulage is by tail-rope system. This seam is said to have been worked by the French in the early history of the province.

BITUMINOUS COAL (screened, stove and pea size). Port Hood Coal Co's Colliery, Port Hood, Inver. Co.—This company owns and is opening up a coal property comprising 16 square miles at Port Hood. The company's slope, known as the "Lawson slope," is being worked at a depth of about 700 ft. The seam is 6 ft. 11 in. thick, and is entirely free from slate bands and partings.* An estimate places the amount of coal contained in two of the company's seams, at 160,000,000 long tons. Other seams exist on the property and will be eventually developed. With the introduction of more modern machinery, an output of from 500 to 1000 tons per day is expected. Output for 1902, 45,900 tons, of which sales and shipments were 39,008 tons.

BITUMINOUS COAL. Inverness Railway and Coal Co's. Colliery, Broad Cove, Inverness Co.—This company has under development some 45,000 acres of areas contiguous to railway. The operations of the company during 1902 were largely confined to development, installation of additional plant, construction of shipping pier, etc., but during the year 38334 tons of coal were produced and 23027 tons sold. Average thickness of seam worked, 7 ft.; length of slope No. 1 is 1,366 feet. Eight seams are reported in this district running in thickness from 2 ft. to 12 ft.

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*An analysis of the coal is as follows:—Moisture, 3.85: volatile matter, 35.60; fixed carbon, 53.50; sulphur, 2.849; ash, 7.05.

THE PICTOU COUNTY COAL FIELD.

This district, situated at New Glasgow, has, so far as exploratory work has been carried, an area of about 35 square miles. Work now being done is expected to show that the seams of this district extend as far as the town of Pictou, giving it an area of many hundred square miles. There are a number of collieries here operated by the Nova Scotia Steel and Coal, the Acadia, and the Intercolonial Companies. The coal is used for the same purposes as that from the Sydney coal field.

BITUMINOUS COAL (lump, stove and nut sizes). **Main Seam, Intercolonial Coal Co's. Drummond Colliery, Westville, Pictou Co.**—The coal areas of this company comprise 7¾ sq. miles. The main and second seams are worked, the third and fourth being intact. The second seam is only being opened up. There are two slopes, average dip 16°, length 6,300 ft., one of which is used for hoisting coal, the other for lowering and raising men, etc. The seam is worked on the long-wall system and no explosives are used, the coal being brought down by maul and wedge. The company also have 20 bee-hive coke ovens, with a Robinson coal washer. During the year 1902, 216,180 tons of coal were raised, of which 191,560 were shipped and 4,685 tons of coke made. The chief markets are in Nova Scotia, Quebec and Prince Edward Island. The "main seam" (which is also worked by the neighboring Acadia colliery) has been analyzed with the following result:

Moisture	1.52
Volatile combustible matter	29.46
Fixed carbon	60.19
Ash	9.10
Sulphur	1.62
Theo. evaporative power	8.24

BITUMINOUS COAL. **Acadia Coal Co.**—This company owns 16 sq. miles of areas, and has the following well-known collieries: Acadia at Westville (seam 10 ft., dip 27°, slope 4,550 ft. long), and the Albion at Stellarton (noted for the thickness of its seams—the Main being 38 ft., and 148 ft. lower, the Deep, 22 ft. thick, also the Third and McGregor). The latter colliery includes the Foord Pit on Main seam, used since the explosion as a pumping station. No. II Slope, on Third Seam, is 2,800 ft. long, dip 22°, (Cage Pit or Deep Seam worked from this slope); and the McGregor slope, seam 15 to 20 ft., slope 4,500 ft. to bottom of basin. The Vale Colliery is 6 miles east of New Glasgow, slope 2,400 ft. long on the

Six Foot Seam. The various collieries have a large plant and are connected with the I C. Railway. The company also manufactures coke. The total output for 1902 was 319,123 tons, of which 278,838 were sold; coke made, 7,411 tons Chief markets,—Nova Scotia, Quebec and United States. The coals of the Pictou district are less bituminous than those of Cape Breton. They are good steam coals and well adapted for use in iron works, etc., and are largely used for domestic fuels. The following analyses will give an idea of their composition:—

	Acadia.	Deep.
Moisture	2.10	.75
Volatile combustible matter	29.20	20.34
Fixed carbon	61.15	68.50
Ash	7.55	10.41
Sulphur	1.48	.94
Theo. evaporative power	8.50	9.39

CUMBERLAND COUNTY COAL FIELD, ETC.

This large and still partly unexplored district probably covers about 350 square miles. The principal operations are at Springhill, where the Cumberland Coal and Railway Company operates mines yielding between four and five hundred thousand tons a year. Smaller collieries are found extending from the Joggins to the Styles mines, a distance of about 20 miles. The coals are bituminous and coking, and are largely used on locomotives in the lower provinces.

Coal beds are known at many other localities, but not worked except at DeBert, near Truro, where a mine is being opened.

Cannel coal, oil-shales, etc., occur in the different districts, but as yet have received little attention.

BITUMINOUS COAL. Cumberland Railway & Coal Co., Springhill, Cumb. Co.—At Springhill, 3 seams from 6 to 14ft. in thickness are extensively worked, the output for 1902 being 480,676 tons, of which 401,777 were sold. Chief markets are New Brunswick, United States and Nova Scotia The colliery is well equipped with modern appliances. No. 2 slope is 3,000 feet in length and works a seam 10 ft. 6 in. thick, and No. 3 is 3,200 ft. and works a 10 ft. seam. Coal shipments are made via Springhill Junction (I. C. R) and by vessels from Parrsboro. The coal has the following general analysis:—

Volatile combustible matter	28.85
Fixed carbon	62 78
Moisture	3.66
Ash	4.32
Sulphur	1.26
Theo. evaporative power	8.69

BITUMINOUS COAL. Scotia Colliery, Maccan, Cumberland Co.—This mine, which is owned by Messrs. Ripley and Blenkhorn, raised in 1902 with a small plant 493 tons of coal, of which 423 were sold.

BITUMINOUS COAL. Maritime Coal Co's "Chignecto Mine," Chignecto, Cumberland Co.—This colliery was re-opened in 1902, and after some initial trouble the mine was unwatered and put in order. At the bottom of the slope, which was in 1902 about 600 feet deep, the top coal measures 3 ft. 6 in., and the bottom coal measures 5 ft. 6 in., separated by 1 ft. 3 in. of fire-clay. There is a third seam of good coal 2 ft. 6 inches thick, overlying what is termed the top coal, which has not been worked. It is separated from the top coal by 4 ft. of fire-clay. The company intend sinking continuously until it reaches 1,400 ft. from the surface. The output in 1902 was 2243 tons, of which the sales were 690 tons, but it is doubtless much heavier this year.

BITUMINOUS COAL. Minudie Coal Co's Colliery, River Hebert, Cumberland Co.—This company's areas comprise about 314 acres at River Hebert, opened by two slopes equipped with a working plant capable of producing about 500 tons per day.

BITUMINOUS COAL. Milner Seam, Strathcona Coal Co's Colliery, River Hebert, Cumberland Co.—This colliery has now a slope of over 460 ft. The coal is reported to be improving in quality with depth. New bankhouse, screens, and engine house have recently been built; 2100 tons of coal were raised in 1902, and 1820 tons sold.

BITUMINOUS COAL. Strathcona Seam, Strathcona Coal Co's Colliery, River Hebert, Cumberland Co.—This is from a seam just discovered on the company's property, and the sample shown is from close to the surface, out of a trial pit. The seam is 3 ft. 6 ins. thick with 2 ins. clay parting in centre.

BITUMINOUS COAL. Canada Coals and Ry. Co's "Joggins Colliery," Joggins, Village, Cumberland Co.—This company controls an area of 12 sq. miles. Colliery connected by rail with I. C. Ry., and a shipping wharf on Chignecto Bay. Seam from 4 to 5½ ft. thick; dip 17°; slopes, 2700 and 2500 ft. respectively. The output for 1900 was 52,609 tons, 12,223 tons of this being used by employees. The coal is chiefly marketed in New Brunswick and Quebec. The following analysis of Joggins coal was made by Sir J. W. Dawson:

Moisture	2.50
Volatile combustible matter	36.30
Fixed carbon	56.00
Ash	5 20

BITUMINOUS COAL. Areas of Dr. J. H. McKay and others, Upper Kemptown, Col. Co.—Various croppings of coal are known in this district. Fifty years ago or more a pit was sunk on one of these seams and a quantity of coal mined and sold throughout the country.

The Kemptown coal slope, put down for Dr. McKay and associates is down 130 feet on the incline (being about 70 feet vertical), timbered throughout, with haulage-way and pump-gear compartment. A borehole at depth of 150 feet is said to have shown 5 feet, and one at 183 feet., 6 feet. of coal, which it is preposed to win by the sinking of the present slope. Union station on the I. C. R., is 5 miles distant. Six seams of coal have so far been reported on the 23 sq. miles of areas controlled by this company.

BITUMINOUS COAL. DeBert Mountain, Colchester Coal & Ry. Co., Col. Co.—The sample shown is from about 23 ft below the surface, from a seam 6 ft. 2 in. thick, 20 inches of which is fireclay. The company is putting down two slopes, one being 100 ft. and the other 205 ft.

CANNEL COAL. Rev. M. A. McPherson's lease, near North Sydney Harbor, C. B. Co.—The seam from which this was taken is said to be 2½ ft. thick.

The following tables will show the trade by counties, and the production by companies for the year ended September 30, 1902 :—

COAL TRADE BY COUNTIES FOR THE YEAR ENDED SEPTEMBER 30TH, 1902.

	CUMBERLAND.	PICTOU.	CAPE BRETON.	OTHER COUNTIES.	TOTAL.
NOVA SCOTIA :					
By land	107469	228146	231857	13144	580616
By sea		21920	750851	29176	801947
Total	107469	250066	982708	42320	1382563
New Brunswick	211647	30631	71544	5516	319338
Newfoundland		102	102689	2496	105287
P. E. Island		27470	23262	5471	56203
Quebec	59233	125185	1049930	9632	1243980
West Indies			5982		5982
United States	74492	21929	654961		751382
Other Countries			33891		33891
Total	452841	455383	2924967	65435	3898626

COAL PRODUCE OF NOVA SCOTIA FOR YEAR ENDED SEPTEMBER 30TH, 1902.

COLLIERY.	Produce.	Sales.	COLLIERY CONSUMPTION.	
			Engines.	Workmen.
Chignecto	2243	690	1434	255
Joggins	58027	46968	9341	2026
Jubilee	1378	1163	115	....
Springhill	480676	401777	31266	8875
Scotia	493	423	....	....
Strathcona	2100	1820	225	48
Acadia	286582	245278	35318	5789
Intercolonial	206599	189183	15553	3871
N. S. Steel & Coal Co., (Pictou Co.)	22422	20922	1300	....
Dominion	2952578	2715866	120064	28429
N. S. S. & C. Co., (Sydney)	241891	186539	50093	8525
Gowrie & Block House	19597	14880	3536	1120
Sydney Coal Co.	7493	7682	72	139
New Campbellton	11939	9352	1775	1328
Port Hood	34517	33056	3002	822
Broad Cove	38334	23027	5920	408
	4366869	3898626	279014	61635

GRAPHITE.

This mineral occurs in Cape Breton at Grand Narrows, Glendale, West Bay, East Bay, Hunter's Mountain, in the slates of the Nova Scotia gold fields, and at Musquodoboit, Hammonds Plains, etc.

These deposits appear in some cases to be well suited for the arts, but no attempt has been made to mine them.

GRAPHITE. Morrison's farm, French Vale, C. B. Co.—Owned by John A. McKenzie and others, of Sydney. So far has only been prospected. Surface material on analysis gave 39% graphite. See analysis in Report Geol. Survey of Canada.

GRAPHITE. H. F. McDougall's property, near Christmas Island, C. B. Co.—Awarded a diploma at the recent Paris and Glasgow exhibitions. The analysis is as follows:

Graphitic carbon	50.23
Rock matter	43.37
Water	6.50

OIL.

Indications of petroleum have been observed at Lake Ainslie in Cape Breton, and at Cheverie, Hants county, and some work done to test its presence in quantities of commercial value.

PETROLEUM IN GYPSUM. Burgess Bros. plaster quarry, Cheverie, Hants Co.—The presence at this vicinity of oil permeating the gypsum has been known for a number of years and has led many to think that a workable deposit of petroleum exists in connection with the underlying strata (shales), which are the equivalents of the oil-bearing Albert shales of New Brunswick. It remains to be proved if this is the case, or whether the petroleum which has been derived from these rocks has been able to pass off without accumulating in large deposits. During the present year extensive boring operations have been carried on at this place by the Nova Scotia Oil & Gas Co. A hole 1500 ft. deep failed to strike a deposit, but another hole is now being driven.

GOLD FIELDS.

The gold fields of Nova Scotia extend from Canso to Yarmouth, and cover, exclusive of the masses of intrusive granite, about 3,000 square miles. The labors of Mr. Faribault, of the Canadian Geological Survey, have presented us with maps and sections and descriptions of that part lying to the east of Halifax.

The gold field strata, originally horizontal, have been folded into numerous undulations having a general east and west course, and north and south dips. In these undulations, interstratified with the rocks, are the gold-bearing quartz veins. These veins, owing to the denudation of the crests of the anticlinals or undulations, are seen in long elliptical outcrops, while underneath are similar veins not seen at all on the surface. Where these lower veins, untouched by denudation, pass over the axes of the anticlinals, they thicken, forming "saddle backs," due to the favoring conditions of the strata. The attention of our gold miners is at present directed to the problem of the best way of attacking and working these saddleback veins, and it is anticipated that, by their systematic exploration, gold mining in Nova Scotia will receive a long desired stimulus.

In addition to these intercalated veins there are others cutting the strata, which have been successfully worked.

Gold is plentiful in the surface earth of many districts. In many cases it should be washed or run through a crusher.

Nova Scotia gold having a fineness of over 900 parts, occurs as free gold in quartz with sulphides of various metals. It is extracted in stamp mills, and the residuum treated for the gold lost in the mills.

There are a number of districts scattered through the counties of Guysboro, Halifax. Hants, Colchester, Lunenburg, Queens and Yarmouth.

The following tables show the total yield of gold per district and the district yield for the year ended September 30th, 1902:—

GENERAL GOLD STATEMENT YEAR ENDING SEPTEMBER 30TH, 1902.

District.	Tons Crushed.	Total Yield of Gold.			Average Yield of Gold Per Ton.		
		Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.
Stormont	35906	6290	1	18	....	3	13
Sherbrooke	15412	3720	9	....	....	4	20
Renfrew	974	1374	11	1	1	8	5
Wine Harbour	4187	1186	2	....	....	5	16
Leipsigate	2390	1135	2	14	....	9	7
Harrigan Cove	3445	1564	3	3	....	8	26
North Brookfield	7736	3051	5	1	....	7	21
Waverley	11789	3049	14	....	....	4	20
Caribou	9890	2162	....	21	....	4	9
Oldham	719	565	10	....	....	15	18
Uniacke	3896	1992	19	23	....	10	6
Lake Catcha	1037	554	8	11	....	10	17
Kemptville	515	389	17	....	....	15	3
Other districts	4180	1243	....	17	....	5	23
Total	192076	28279	5	13	....	5	13

PRODUCTION OF GOLD FROM 1862 TO 1902.

DISTRICT.	TONS CRUSHED.	TOTAL YIELD OF GOLD.			AVERAGE YIELD OF GOLD PER TON.			VALUE AT $19.00 PER OZ.
		Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	$
Caribou and Moose River..........	142539	46594	12	21	......	6	13	$ 885298
Montague	27167	41309	10	18	1	10	10	784882
Oldham	49943	53513	12	16	1	1	10	1016759
Renfrew	50326	43053	......	7	......	17	3	818007
Sherbrooke.....................	259599	145616	12	6	......	11	5	2766714
Stormont....	244815	78886	14	21	......	6	11	1498848
Tangier	48122	23295	4	15	......	9	16	442609
Uniacke	59194	41469	15	1	......	14	......	787926
Waverley	147725	68124	11	9	......	9	5	1294367
Brookfield	59420	27404	12	23	......	9	5	520688
Salmon River...................	117906	41497	5	20	......	7	1	788448
Whiteburn	6583	9625	12	18	1	9	6	182887
Lake Catcha	25894	25700	13	13	1	19	21	488313
Rawdon	12189	9606	5	10	......	15	18	182519
Wine Harbour	58773	30015	14	14	......	10	5	570299
Fifteen Mile Stream	34876	16726	10	5	......	9	14	317804
Malaga	20846	19282	1	7	......	18	12	366359
Other Districts	95746	57951	18	4	......	12	3	1101087
	1461672	779674	9	12	......	10	16	14813814

AURIFEROUS QUARTZ. Dolliver Mountain Mining and Milling Co., Isaac's Harbor.—This company's property, which is situated at Isaac's Harbor, N. S, includes a large water power and electrical plant, the first to be installed in the gold fields of the province.

AURIFEROUS QUARTZ. Bluenose Gold Mining Co., Sherbrooke.—This company is now opening up underlying saddle veins on the anticlinal.

AURIFEROUS QUARTZ. N. S. & Mexican Mining Co., Sherbrooke.—This company has recently installed a new plant, and is now sinking a vertical shaft from which the veins for a considerable distance across the measures will be developed.

AURIFEROUS QUARTZ. Royal Oak Mining Co., Sherbrooke.—The whole north-western turn of the anticlinal is being comprised in the operations of this company, which is now enlarging its milling capacity and plant.

AURIFEROUS QUARTZ. Baltimore & N. S. Mining Co., Caribou.—This company is working on a large ore-shoot said to be a fissure deposit. The workings have reached a vertical depth of over 800 feet.

AURIFEROUS QUARTZ. H. Sanders, Caribou.—This sample is from the above-mentioned property.

AURIFEROUS QUARTZ AND SULPHIDES. Austen Bros., Beaver Dam.—Though little developed, the district is said to contain some very wide belts of workable low grade ore.

AURIFEROUS QUARTZ. Austen Bros. et al., Blockhouse.—From new workings on a fissure vein.

AURIFEROUS QUARTZ. The Brookfield Mining Co., North Brookfield..—This company has been working since 1892. The average size of the vein worked is said to be about 14 inches, and it yields about $17.00 per ton. The gold is saved partly by amalgamation and partly by concentration and chlorination.

AURIFEROUS QUARTZ. Golden Group Mining Co., Montagu.—This property, though worked for many years at a good profit, is at present idle.

AURIFEROUS QUARTZ. Mines Department,* Montagu. From Belt Lode.

AURIFEROUS QUARTZ. Waverley Gold Mining Co., Waverley.—The specimens shown are from the famous barrel lead now being worked by the above company. Samples are also shown from the Mines Department collection.

AURIFEROUS QUARTZ. J. H. Townshend, Lawrencetown.—This property has recently been transferred to a stock company called the Shanghai Gold Mining Co.

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*The specimens to which the Mines Department's name is affixed, are from the Department's collection in the Provincial Museum.

AURIFEROUS QUARTZ. MicMac Mining Co., Millipsigate.—This company took over above property about two years ago from Messrs Cashon & Hines, and has since been working continuously on the fissure vein, which has proved to be very persistent in size and general characteristics. A cyanide mill has recently been added to the property.

AURIFEROUS QUARTZ. Mines Department, Millipsigate.—From fissure vein.

AURIFEROUS QUARTZ. Mines Department, Cow Bay.—All the veins in this comparatively new district cut the strata at right angles, their strike being approximately north and south.

AURIFEROUS QUARTZ. Mines Department, Fifteen Mile Stream.

AURIFEROUS QUARTZ. W. C. Sarre, Gold River.—From the Vermilion Lead.

AURIFEROUS QUARTZ. Mines Department, Renfrew.—A system of some 50 interlaminated veins has been developed here on the south side of a broad anticlinal dome. Several of them have been opened along their outcrops and many important pay streaks have been worked to depths reaching 350 feet.

AURIFEROUS QUARTZ. Mines Department, South Uniacke.

AURIFEROUS QUARTZ. Messrs. Archibald and Crease, Mount Uniacke. These specimens are among the finest ever taken from a Nova Scotia mine. The property is situated about twenty-five miles from Halifax and three miles from a railroad station, and has been worked by the present operators for about two years. A depth of between 200 and 300 feet has been reached.

AURIFEROUS QUARTZ. R. Dickson, Strathcona mine, Forest Hill, Guys. Co.—The sample shown is from the "School House Lead," at depth of 285 feet. Lead from 8 to 14 inches wide. Two shafts are on this lead, one now down 345 feet, the other 250 feet. The best month's return was 352¾ ozs. for the one month's work. and the poorest month about 94½ ozs. Crush in a 10-stamp steam mill.

STIBNITE (Antimony Ore), Auriferous. Dom. Antimony Co., West Gore, Hants Co.—Stibnite was first discovered here in 1880 on J. McDougal's farm. The ore occurs in two main fissure veins, called respectively the North and South veins. The former has received most attention up to now. It runs N 45° W and dips 85° to S W, and has been traced for over 1200 ft. In width it varies from a few inches to 7 ft. and in its widest part has been solid stibnite. The ore chute dips 45° to the S E. More or less gold is found in the ore, and it seems to be richest in that mineral when the percentage of stibnite is high. Whith the exception of where a cross vein of quartz comes into the vein at No. 1 shaft, none of the gold is free, even in ore assaying as high as 10 oz. gold to the ton. Assays of second-class ore has shown as high as $186 per ton of

2,000 lbs. A very conservative estimate of the second-class ore left in the vein gives it an average thickness of 6 inches, containing 12 per cent. antimony and $23 gold to a ton of 2,240 lbs. Four shafts are on this north vein and the amount of ground stoped is roughly estimated at 76,000 square feet of the vein. From this amount of ground stoped, 3,121 tons had been shipped before the present owner secured the property, and from then till 1901, 1,236 tons were shipped. For a long time it was not known that the ore contained gold. Full particulars of this interesting ore will be found in the *Journal of Mining Society of Nova Scotia*, vol. vi, p. 80.

ARSENOPYRITE, PYRRHOTITE AND CHALCOPYRITE (Gold, Arsenic and Copper ore). Richfield Mining Co's property, McLeod Brook, L'Abime River, Cheticamp district, Inver. Co,—This ore carries from $4 to $90 of gold per ton and the total value of the ore runs from $4 to nearly $97 per ton. Assays also show the presence of silver. The two principal deposits owned by the company are known as "Iron Cap" and "Mountain Top"—the former consisting of a bed of chlorite schist 9 feet thick, carrying auriferous arsenical ore, the latter consisting of beds of serecite and chlorite schists aggregating 50 feet in thickness, carrying similar ore. The age of these schists is Pre-Cambrian.

LEAD ORES.

In Nova Scotia these ores are known principally in the carboniferous limestone and in the pre-cambrian. As yet few attempts have been made to prospect them. The limestones carry lead ore, more or less silver bearing, in the counties of Pictou, Colchester, Halifax, Guysboro and in places in Cape Breton Island.

At Smithfield in Colchester, the presence of large amounts of galena was proved some years ago but the low silver contents and the price of lead were discouraging. It is however evident that this deposit and others in the country are well worth further consideration.

GALENITE, Argentiferous (silver-lead ore). Smithfield, near Upper Stewiacke, Col. Co.—At this locality a considerable amount of exploratory work has been done. The ore is found in limestone, apparently replacing it in part, and as a residual concentration from the removal of the rock. An one place a considerable amount of the ore is shown and the deposit, as elsewhere stated, seems to deserve further attention. The average percentage of lead, from a number of analyses, is 57; and the silver contents 25½ ozs. per ton.

GALENITE, Argentiferous (silver-lead ore). Cheticamp Gold Mining Co.'s property, L'Abime Brook, Cheticamp district, Inver. Co.—This deposit of galena was discovered in 1896 while prospecting for gold. The face of the opening is stated to show 20% galena and 3% copper. The ore is reported to carry on an average 1 oz. of silver for every unit of lead, with gold in places up to 14 cwt. per ton.

GALENITE, Argentiferous and **CHALCOPYRITE**. Inverness Mining Co.'s property, Silver Cliff, L'Abime River, Cheticamp district, Inver. Co.—This property is immediately south of the Eastern Copper Co.'s property. It has so far only been prospected.

COPPER ORES.

Ores of this metal are found in many places in Nova Scotia. At present, extensive developements with encouraging results are being made at Cape d'Or, Cumberland County, in trap rock carrying native copper. The district lying between Springhill and Pictou, holds many outcrops of copper ore, some of which have been tested to some extent.

Polson's Lake and Lochaber in Antigonish County contain promising deposits. Coxheath near Sydney has deposits of copper-pyrites which have been developed to make the bases of a large mining and smelting business.

In the Cheticamp district, Mr. Brookfield and others, and the Eastern Copper Company, are opening up deposits, which promise the best of results, and promising indications are met over a great part of northern Inverness and Victoria.

NATIVE COPPER. Colonial Copper Co.'s mine, Cape d'Or, Cumb. Co.—This company is developing a copper mining property at Cape d'Or containing 2,300 acres. It also owns copper areas elsewhere, but its principal operations so far have been confined to Cape d'Or, where a modern mining plant has been installed, comprising air compressors, drills, hoisting-engines, and other machinery. A concentrating plant is also being erected. No. 1 lode shaft has a length of over 371 ft., with over 1,000 ft. of tunnels and drifts. No. 2 lode slope going south, 326 ft. and another slope going north 300 ft., with 800 ft. of tunnels and drifts. No. 3 lode shaft, depth 180 ft., with tunnels and drifts of over 300 ft. A railroad has also been built from tha mines to the mill. The native copper occurs here in veins and joints in the triassic trap.

CHALCOCITE AND MALACHITE. Hon. S. H. Holme's lease, Caribou River, Pictou Co.—This deposit has been known for a considerable period, and a fair amount of prospecting has been done. Some ore was extracted by the Copper Crown Co. It occurs in Permian sandstone.

CHALCOCITE NODULES. Colonial Copper Co.'s Mine, French River, Oliver, 4 m. south of Tatamagouche, Col. Co.—Sixty years ago or more, copper was first found here, and some years after the first license to search was taken out by Abram Patterson, father of late Dr. Geo. Patterson. Patterson drove tunnels and sank shafts and extracted some of the nodules which gave 74% copper. Afterwards the property was worked by Mr. Pendergrast and also by Fleming Brown, the latter being the first to work the lignitic ore referred to elsewhere. Brown's company sold to the Colonial Copper Co., the present owners. The property has been well prospected, and a number of tunnels, shafts, and boreholes have been driven and put down. It has long interested capitalists, but is at present idle. The nodules such as shown are particularly rich. Information regarding these deposits may be found in How's Mineralogy of N.S., p. 69, and the writing of Dr. Gilpin and many others.

CHALCOCITE, associated with "Lignite". Colonial Copper Co's Mine, French River, Oliver, Col. Co.—Information regarding this property will be found in the preceeding note on nodules from the locality. The zone of lignitic ore is to the north of the nodule beds.

CHALCOCITE AND MALACHITE, with "Lignite" in Sandstone. W. A. McPherson's "mine," John Chisholm's Brook, Pugwash River, Upper Pugwash, Cumb. Co.—Copper was discovered here by J. Chisholm in 1883. Has been prospected by Mr. Chisholm and Mr. McPherson. Four trial pits and a tunnel are on the property. The copper impregnated sandstone beds are supposed to have a thickness of 12 ft., and they are said to have been proved on the strike for over a hundred feet. Four or five tons of chalcocite were shipped to Boston, and some tons are now on the site.

CHALCOCITE AND MALACHITE in Sandstone. W. A. McPherson's "copper claim," Canfield Creek, near Upper Pugwash, Cumb. Co.—This deposit has been prospected by Mr. McPherson, who in 1902 sank a shaft 25 ft. and took out a quantity of ore.

CHALCOCITE, MALACHITE, ETC., in Sandstone. Amos Blenkhorn "mine," Acadia Copper Co., between Nappan and Maccan, Cumb. Co.—Copper was found here some ten years ago, and about five years ago a good deal of prospecting was done and a timbered slope about 80 feet. long (dipping southward about 47°), was sunk and a few tons of picked ore shipped to the Copper Crown smelter at Pictou. The ore is reported to assay from 5% to 46% metallic copper. Associated with it is argentiferous galenite, azurite, sulphides of iron and copper, lignite; and gold is said to have been shown to be present in some of the assays. The property is now unworked.

CHALCOPYRITE, MALACHITE, ETC., carrying also Gold and Silver. Eastern National Copper Co's property, Grandin Brook, L'Abime River, Cheticamp district, Inver. Co.—The deposit which is claimed to be very extensive, is at present attracting a good deal of attention and is being prospected and developed by the above named company. The ore, which is chiefly chalcopyrite, occurs in hydromica chlorite schist of Pre-Cambrian age. The ore-bearing zone or bed is said to be from 70 to 100 feet wide, but the present operations are on a pay streak 10 feet in thickness. As the result of prospecting, the company claims it has proved the existence of a deposit at least 1,050 feet on the outcrop, and 160 and 100 feet on the dip. Samples taken across the entire width of the deposit have run from 2.4 per cent. to 5 per cent. matallic copper, whilst samples from the vein and lenses have run from 5 per cent. to 8 per cent. copper. The ore also carried as high as $8.50 per ton in gold and silver. The lowest estimate of the copper contents of the rock has been placed at 3 per cent. There is on the property a water-power estimated to run 1700 horse power. The tabulated statement below will give an approximate idea of the estimated average value per ton of the ore-body, figuring metallic copper at 12 cents per pound:—

Sample.	Gold.	Silver.	Copper.
From weathered outcrop........	$1.32	$1.03	2.40 p. c.
From quartz gash veins	6.60	4.40	7.81 p. c.
Quartered down samples from across the deposit	Not assayed for.		3.00 p. c. 4.00 p. c. 5.00 p. c.

One test gave the following values:

Gold	13 dwts. per ton.
Silver	7.83 ozs. per ton.
Copper	7.84 per cent.
Value	$34.42 per ton.

CHALCOPYRITE. R. A. L. Watson's area, George River Mountain district, George River, C. B. Co—This ore has gone very high in copper contents.

CHALCOPYRITE. "B" vein, No. 2 shaft, Cape Breton Copper Co.'s mine, Beechmont, Coxheath Hills, Cape Breton Co.—This well known deposit has been amply developed and is one of the more promising ones in this province. The company was formerly known as the Eastern Development Co. The mining areas cover 2 sq. miles and the land and water lots owned in fee, 1484 acres. Four shafts are on the property, respectively 300, 420, 100 and 45 feet deep; and the areas have been also well prospected by trial pits and trenches. The first shaft was sunk in 1880 and the last one in 1892. No. 2 (420 ft.) shaft is the main one, from which is won the ore of veins "B" and "C." The plant is excellent and includes steam hoists, compressors, 12 Rand slugger drills, large ore table, trams, saw-mill, etc., etc. A large amount of ore is on the surface and on being sampled straight across gave an average of 7% copper for the whole pile. A railway to Watson's Point, the proposed site for a smelter, has been surveyed. The mine has been closed for two or three years but is expected to open again.

Chalcopyrite (copper ore). Alex. Matheson property (C. P Moffatt), George River Copper Mine, George River Mountain, C. B. Co.—Awarded 1st class diploma at Paris and Glasgow Exhibitions.

Chalcopyrite. French Road, C. B. Co.—Owned by J. A. McKenzie and others but leased by W. N. Young who has done a good deal of development and has an excellent plant at the mine.

IRON ORES.

Ores of iron are known in workable amounts in nearly every county in Nova Scotia. At present mining operations are confined to the property of the Nova Scotia Steel and Coal Company, Bridgville, Pictou County, the property of the Londonderry Iron Company, Colchester County, and the Torbrook Mine, Annapolis County.

The deposits in the districts of Torbrook and Nictaux, Londonderry and Bridgeville are very large and in many cases of excellent quality. Deposits are also known at Pugwash, Clementsport, Clifton, Goshen, Newton Mills, Selma, Brookfield, Arisaig, Salmon River, Mira, East Bay, George River, etc, etc.

Every variety and quality of ore is met; magnetite, red hematite, brown hematite, etc.

At present the steel and iron works at Sydney are supplied with exceptionally cheap ore from Bell Island, Newfoundland, but as the cost of this ore increases, the local deposits will be called on.

Raw Material and Products. Dominion Iron & Steel Co, Sydney, C. B. County.—Coal, coke, Wabana Hematite (iron ore), Marble Mountain Limestone (flux), sand pig iron (Nos. 1, 2 and 3), machine cast pig iron, steel billet, steel slab, sulphate of ammonia.—The very extensive works of this company are too well known to require anything but a very brief description. The company was incorporated in 1899, and soon after began construction work at Sydney on a site of about 800 acres. The works now include, in general, a plant of 4 blast furnaces (85 ft high and 20 ft diameter at the bosh); 10 50-ton open hearth furnaces (estimated output 1,400 tons per day): 35-inch blooming mill and pit furnaces; 400 Otto-Hoffman coke ovens (capacity 1,600 tons per day); coal washing and sulphuric acid plants, and essential by-product plants; machine shop and foundry. Ore is chiefly obtained from the company's Wabana mine (Bell Island), Nfld; limestone from Marble Mountain Iron Co.: dolomite from George River and New Campbellton: and coal from the Dom. Coal Co's mines in the Sydney coal field. The output for the year 1902 was: coke, 338,230 tons; pig iron, 191,259 tons: steel billets and slabs, 86,424 tons.

IRON ORES. Londonderry Iron & Mining Co.'s mine, Londonderry, Col. Co.:

Hematite, specular ore	67	per cent.	metallic	iron.
Limonite	50	"	"	"
Limonite, "bottle ore"	48	"	"	"
Limonite, Old Mountain brown hematite	50	"	"	"
Siderite, East Mines spathic ore	30	"	"	"
Ankerite	12	"	"	"

These well known deposits are now being opened up after having been unworked for some years, and the present company is making extensive preparations to mine and smelt. Furnace A is now about completed, is 75 x 17 ft, and has a capacity of 48,000 tons of foundry iron. Particulars of the various Londonderry ores will be found in a number of papers and books dealing with the economic geology of the province. The deposit occurs in slates and quartzites on the southern slope of the Cobequid Hills. It has an approximate east and west course, and has been traced for more than twelve miles; composed of carbonates and oxides of iron. Width is sometimes two hundred feet, and ore bodies of fifty feet have been found. Has been worked in places on a large scale The following analyses of limonites are from the Report of the Geol. Survey of Canada, 1873-4:

	OCHREY LIMONITE Cumberland Brook	COMPACT LIMONITE Ross Farm
Peroxide of iron	79.68	84.73
Protoxide of iron	——	trace
Protoxide of manganese	2.51	0.23
Alumina	0.63	0.23
Lime	0.57	0.14
Magnesia	0.34	0.14
Silica	3.05	——
Phosphoric acid	0.44	0.19
Sulphuric acid	0.01	0.01
Water (hygroscopic)	0.78	0.33
Water (combined)	11.65	11.07
Equivalent to:		
Metallic iron	55.78	58.31
Phosphorus	0.19	0.083

HEMATITE, SPECULAR. H. A. Archibald's property, Erinville, Guys Co.—This property has two shafts, the deepest of which is about 75 ft. Considerable stoping has been done.

HEMATITE, RED.—Rev. M. A. McPherson's areas, Barachois, Boisdale, St. Andrew's Channel, C. B Co.—This deposit has so far only been prospected, and the occurrence of iron traced for about three miles. Average analyses are said to give 65% metallic iron, and have gone as high as 69%.

HEMATITE, SPECULAR. R. A. L. Watson and Sheriff Ingraham's areas, Barachois, Boisdale, C. B. Co.—This ore is said to contain 67% metallic iron.

HEMATITE, RED. Hon. R. Drummond's Mine, Iron Mines, Skye Mountain, near Whycocomagh, Inv. Co.—This deposit, which is on the Indian Reserve, has been worked by Mr. Hood and Mr. Drummond. Two tunnels and also bore holes have been driven into the side of the mountain, and a good deal of prospecting done, revealing the presence of ore in various localities. The deposit is at present not worked.

HEMATITE, RED. Grand Anse, Rich. Co.—This deposit is now being prospected. Wm. McFatridge of Halifax and others being interested in it.

HEMATITE. E. W. Moseley's areas, Loch Lomond, C. B. Co.

HEMATITE. E. W. Moseley's areas, East Bay, C. B. Co.

HEMATITE. T. Routledge, near Marion Bridge, Mira River, C. B. Co.

HEMATITE, RED. East Branch Doctor's Brook, near Dunn Point, Antig. Co.—This property containing 6 sq. miles is at present controlled by C. N. Wilkie and others of Antigonish. Much prospecting has been done here by Laughlin McDonald, a New Glasgow company, and Joseph Pushie. It is claimed that there are thirteen beds of hematite opened up on the six square miles, running in thickness from 3 to 20 feet, or a combined thickness of 80 or 90 feet of ore. The zone of ore beds extends for a number of miles, trial pits and shafts having proved it in very many places. Some of the smaller beds contain the better ore, which has assayed from 40 to 53% metallic iron. A good future is expected for this property which is probably one of the best in the province. The sample shown is from a bed about 20 ft. thick with some stone partings.

HEMATITE, RED. C. N. Wilkie's areas, Arisaig, Antig. Co.—This is from the western part of Mr. Wilkie's areas, some particulars of which have just been given.

HEMATITE, VAR. SPECULAR IRON. Workingmen's Syndicate property, Springfield, Antig. Co.

HEMATITE, RED. Bluff on shore, G. W. Dill's farm (lease of K. and G. J. Macintosh), Cambridge, Hants Co.—Analysis gives 59.95 per cent. metallic iron. Bed as shown in face of cliff is reported to be 6 feet wide and extends 20 feet. So far the deposit has only been prospected.

HEMATITE, VAR. RED HEMATITE (FOSSILIFEROUS). "Shell-ore vein," Corbett's mine, Fletcher Wheelock's farm, Torbrook, Annapolis Co.—The presence of iron ore at this place in rocks of supposed Devonian age has been long known, and a quantity of ore was taken some years ago from a trench along the outcrop. The depth and extent of this "vein" was recently proved by bore-holes, and about February of this year, Messrs. Geo E. Corbett, S. M. Brookfield and others began sinking a shaft which is now down over 50 feet. The shaft is said to have started in 6 feet of good ore, strike

N. 65 E. (magnetic), and at about 40 feet had widened out to 7 feet. The mine is about 2¼ miles from the Torbrook Iron Co's mine.

HEMATITE, VAR. RED HEMATITE. "Leckie vein," Torbrook Iron Co's mine, Torbrook Mines, Anna. Co.—This deposit has long been well known and much work has been done upon it and much ore raised. After having been closed for seven years the mine was unwatered in April of this year and ore raised since June, the output having recently been 75 tons per day. The mine is well equipped with machinery; the slope is 300 feet on the incline and there are 5 levels. The bed of ore varies in thickness from 6 to 12 feet (average about 8 feet.) A cross-cut south 20 ft. has struck an 8 ft. bed of hematite, overlying the one now worked. The ore is being shipped to Londonderry, N. S., to be smelted. The shipping ore averages about 55 per cent. iron. Sulphur is reported to be absent, and phosphorus not higher than 1 per cent.

LIMONITE. "Saddler Mine" (Fraser farm), near Bridgeville, Pict. Co.—Owned by Alex. Fraser and others. Now unworked. About 1830 ore was mined here by the General Mining Association, and about 1886 some was shipped to the Londonderry furnaces. The N. S. Steel Co. has also operated the mine on royalty. The shaft is 150 ft deep. Ore goes with land. The sample shown does not well represent the quality of the ore, no good specimens being obtainable.

LIMONITE Bridgeville Mining Co's Mine (Grant farm), near Bridgeville, Pict. Co.—Wm Grant first found ore here some forty years ago. Worked by Pictou Charcoal Iron Co. and others. The mine is now in operation, having been opened in May of this year, and up to August 3,000 tone of ore are said to have been taken out and sold to N. S. Steel Co. at $3,00 per ton, averaging 40% iron. The main shaft, 200 feet deep with two levels, has ceased work and a new shaft is being sunk to the north. The ore goes with the land.

LIMONITE. "McDonald Mine," Bridgeville, Pict. Co.—Has been pretty well developed in the past but is now unworked.

LIMONITE. "Cameron Mine" ("Tanner Mine"), south side road J. S. Cameron's farm, Bridgeville, Pict. Co.—Shaft 600 ft. deep, sunk by N. S. Steel Co. about 8 years ago. Ore goes with the land. Owned by Black Diamond Co. Now idle. Another shaft is on the north side of the road.

LIMONITE. "Fraser Mine" (Samuel Fraser's), Bridgeville, Pict. Co.—The ore here goes with the land. The mine has been pretty well developed by the Nova Scotia Steel Co. and others, but is now idle.

LIMONITE. Old Barns, Col. Co.—This deposit is on the farms of Isaac Youill and John and Robert Forbes, and is owned by H. V. Harris, Thos. G. McMullan and others. A timbered shaft, about 100 feet deep, with levels, has been sunk, and there is also an old abandoned shaft. About four barrels of ore were shipped this year to Montreal, but the shaft is now full of water.

LIMONITE. Brookfield, Col. Co.—This deposit has been known for a long period, and has been worked intermittently by the Londonderry Iron Co. and others.

LIMONITE. Canfield Creek, near Upper Pugwash, Cumb. Co.—Said to have been opened up by the Londonderry Iron Co. about sixteen years ago, and some tons of ore shipped to Londonderry. It has since been prospected by the Dominion Steel Co. The present specimen is possibly a poor sample of the ore. Ore also occurs across the creek, doubtless on the strike of this bed.

MAGNETITE. Areas of Dr. J. H McKay and others, Upper Kemptown, Col. Co.—This ore has been known for about twenty years. Five or six beds of ore have been prospected by trial pits, one of the beds being reported to be 13 ft thick. The company owns five square miles of iron areas, which are about 4 miles from Union Station on the I. C. Ry. Coal and flux occur in the immediate neighbourhood.

MAGNETITE. J. A. Johnson's areas, Gerrish Mountain, Col. Co.—This deposit has been known for a long period. Said to contain 65 per cent. metallic iron.

MAGNETITE. Lease of Jacob S. Hart and others, Mulloch, near Whycocomagh, Inv. Co.—A good deal of prospecting has been done here and some ore extracted and piled at the shaft.

MAGNETITE. Rev. M. A. McPherson's areas, Barachois Mountain, St. Andrew's Channel, C. B. Co.—A shaft has been sunk 33 ft. on this property and the deposit has been traced by trial pits for a couple of miles, although its extent is said to be greater. Averages about 60 per cent metallic iron.

MAGNETITE. R. P. Fraser's area, Iron Mines, Skye Mountain, near Whycocomagh, Inver. Co.—The sample shewn is from a trial pit on the side of the mountain and about a mile from the road. Other prospecting has been carried on in this area. Analyses of Skye Mountain magnetite made in the laboratory of the N. S. Steel Co. gave iron contents 49 to 63 per cent. and phosphorous 0.01 to 0.5 per cent.

MAGNETITE (Magnetic Iron Ore). About 2½ miles north of Somerset post office, Kings Co.—This ore occurs in triassic traprock associated with amethyst, but so far such deposits have not been found to be of large extent. This specimen was taken from area covered by N. W. Keddy and Dr. March's lease, on Arthur Palmer's land. The vein or lens is from 7 to 10 in. thick, and the iron contents of the ore is said to be 61 per cent.

PYRITE (Iron Pyrites). W. M. Dustan's property, Pleasant Bay, Inver. Co.—An analysis made in the laboratory of the Dom. Iron & Steel Co., showed sulphur 41.40 per cent, iron 33.15, arsenic trace.

The deposit, which is three miles from shore, could probably be utilized as a source of sulphuric acid. Owned by W. M. Dustan of Pictou.

PYRITE (Iron Pyrites). Rev. M. A. McPherson's property, George River Mountain, C. B. Co.—This deposit is said to be extensive—from 20 to 30 ft. wide, and covering over 2 miles in length. Doubtless could be worked as a source of sulphuric acid.

GYPSUM.

The deposits of this mineral are very abundant in the central, northern and eastern countries. It occurs as hydrous or soft, and anhydrous or hard gypsum, in every variety of structure and purity. There is an export trade to the United States of about 150,000 tons a year, in addition to considerable amounts used locally for fertilizers and architectural purposes.

CALCINED PLASTER (Plaster Paris). Manufactured by Windsor Plaster Co., from Gypsum of T. A. Mosher's quarry, near Newport Station, Hants Co.—This company's mills at Windsor are equipped with all machinery for crushing, grinding, calcining and packing this and other products. Although much gypsum is quarried in Nova Scotia and shipped in rock form, this company has possibly the only calcining plant at present in the province. The Plaster Paris is used in making "putty finish." The company owns gypsum quarries at St. Croix and Ellershouse which it does not at present work.

GYPSUM. Windsor Gypsum Co's (Thos. A. Mosher's) quarry, 1 mile northward of Newport Station, Hants Co.—This quarry was opened about eleven years ago and now has a heavy output, that for 1902 being reported as about 27,000 long tons. It is connected with the Dom. Atlantic Railway and the company's wharf at Windsor. Almost the entire output is now taken, in the raw state, by the Higginson Manfg. Co. of Newburgh, N. Y.

SELENITE CEMENT. Manufactured by special process by Windsor Plaster Co., from Gypsum obtained at T. A. Mosher's (Windsor Gypsum Co's) quarry near Newport Station, Hants Co.—The Windsor Plaster Co has extensive mills at Windsor, N. S., which were started about 1891. "Selenite Cement" is used for undercoating in place of mortar, and has the property of rapidly setting.

GROUND GYPSUM ("Land Plaster"). Manufactured by Windsor Plaster Co. from "Blue Plaster" (Gypsum), obtained at George Redden's quarry, 2 miles south-east of Windsor.—This material is largely used as a land fertilizer.

GYPSUM ("Blue Plaster"). George Redden's quarry, about 2, miles south-east of Windsor, Hants Co.

Gypsum. Wentworth Gypsum Co's Eagle Swamp quarry, Wentworth, Hants Co.—This company has a very large output which is shipped in the raw state to New York, U. S. A. About 200 men are at present employed at this quarry. The company owns three locomotives and a railway, 2½ miles long, to its wharf. Besides the Eagle Swamp quarry which is at present worked, the company owns the "Fraser" and "Blue" quarries.

Gypsum ("Blue Plaster"). Wentworth Gypsum Co's quarry Wentworth, Hants Co.—This is merely a bluish tinted gypsum, too dark for white work, but is ground and used as land plaster (fertilizer) for agricultural purposes, and is also used as an absorbent in stables, slaughter houses, etc.

Gypsum, var. Selenite. Canfield Creek, near Upper Pugwash, Cumb. Co.—This sample is from an unworked deposit.

Gypsum. Near Dutch Settlement, about 3½ miles from Elmsdale, Hx. Co—The quarry, which is about half a mile from the I. C. Ry., with which it is connected by a siding, made some shipments during the present summer. Some very fine selenite occurs here.

Gypsum. Edw. Burgess' Quarry, Old Barns, Col. Co.

Anhydrate ("Hard Plaster"). Wentworth Gypsum Co's quarry, Wentworth, Hants Co.—This mineral occurs in lenticular masses and beds associated with the soft plaster or gypsum. It is at present put to no use, except occasionally, perhaps, for foundation stones.

MANGANESE.

The ores of manganese found in Nova Scotia are noted for their purity. They occur in limestone divisions of the carboniferous at a number of places in the province. The best known locality is Tenny Cape, in Hants county. Here a very rich and pure ore has been worked at intervals for a number of years. At one time the price realized was as high as $130 per ton. The ore occurs in strings and pockets in limestone. In this county the surface indications are extended over a large tract of land, but at present no work is being done. Similar ores are met at Onslow, near Truro, and at Loch Lomond, in Cape Breton county, but have not been mined to any extent. There are indications of the ore in a great many other places, but the deposits seem to be too small to work. A recent discovery was reported from New Ross, in Lunenburg County. Here the deposits are described as being of good value, but are at present too far from water to permit of shipment economically.

Pyrolusite. John S. Archibald's mine, Manganese Mines, near Valley Station, Col. Co.—First worked about 1881 by D. Archibald and A. Carter. Three timbered shafts are on the property, the last having been sunk last fall, but no work is at present being done. Boiler, engine, pump and riddles are at the mine. Picked ore from here has sold for $90 a ton, but average price was about $60. The ore occurs in a red sandstone.

PYROLUSITE Fred Shipley Mine, about half mile west of Brookdale, Cumb. Co.—This deposit which occurs in carboniferous limestone, was discovered about seven years ago. A pit about 20 ft. deep was sunk on it, and a number of tons of ore shipped. Edward Curran and W. O'Neil are reported to own the deposit.

PYROLUSITE. George E. Boak's property, Tenny Cape, Hants County.—This deposit has long been known and has supplied a large proportion of the fine ore which has been shipped from the province, and which at times has brought very high prices. The ore appears to be principally connected with red and grey limestone, dolomitic in composition. The mineral occurs in irregular nests or pockets, and in seams eroded on the bedding planes and cross fractures It is chiefly a fibrous pyrolusite. with splendant lustre. based on a compact or granular ore consisting of pyrolusite, of psilomelane, and of manganite, the latter not in large quantity. Many tons have been shipped, yielding as high as from 88 to 95 per cent. of available oxide of manganese. The annual production here has seldom exceeded 200 tons, most of which, it is said, is used by glass-makers. One pocket produced no less than one thousand tons of ore. Further information regarding this mine will be found in most works dealing with the economic minerals of the province.

PYROLUSITE G. W. Churchill's property, Walton, Hants Co.—Very fine manganese ore is found here, and the above remarks regarding the Tenny Cape ore will apply generally to this deposit.

PYROLUSITE E. W. Moseley's property, Loch Lomond, C. B. Co.

MANGANITE (manganese ore). Bridgeville, Pict. Co.—This ore occurs in association with the limonite of this district, and very beautiful specimens have been found.

ANTIMONY.

A sulphide of this ore occurs near Rawdon in Hants county, carrying considerable per centages of gold and silver. A mine is opened on this deposit, and about 3,000 tons were shipped. Other deposits are known in the vicinity also carrying high gold values, and it is probable that before long attempts will be made to work them as well.

STIBNITE (Antimony Ore), auriferous. Dom. Antimony Co's mine, West Gore, Hants Co.—An account of this interesting ore will be found under the heading of Gold in this catalogue, p. 17.

a few tons, but did not ship. Two shafts are on the property, but it is now idle.

BARITE (Barytes). South Branch, Black Brook, near Springhill, Cumb. Co.—The barite at this locality occurs in narrow veins from about ½ to 5 inches in diameter, and so far has not been found to be of economic importance.

BARITE (Barytes). "Johnston Mine" (Henderson & Potts), eastern side Lake Ainslie, Inv. Co.—This ore is shipped to Halifax, and ground for use in paint making. The deposit is said to be fairly extensive, and is worked intermittently according to demand. It is shipped at Whycocomagh. The samples also show Messrs. Henderson & Potts ground barytes from this locality as well as from Newfoundland mineral, also ground marble from Marble Mountain, and ground dolomite from Stewartdale (Whycocomagh).

BARITE (Barytes). Eastern Milling Co's property, Cape Rouge, Inv. Co.—This deposit produces excellent barite, very free from colour. It or a neighboring deposit has been worked lately and the mineral ground for use in paint making by Messrs. Henderson & Potts of Halifax, and by the Eastern Milling Co. of Dartmouth, the latter using a bleaching process also. A sample of the bleached ground mineral is shown as well as unbleached ground, the latter from "off colour" material.

BARITE (Barytes). Eastern Milling Co's. "McDougal" mine, east side of Lake Ainslie, Inv. Co.—The samples show the raw and ground mineral, the latter being both bleached and unbleached.

BARITE (Barytes). Five Islands, Col. Co.—This locality has furnished some fine cabinet specimens, as well as a quantity for commercial purposes. Occurs in pockets in limestone.

BUILDING STONES, ETC.

The principal stone used for structural purposes in this province is either sandstone or granite. There are several varieties of the former, passing from a very light fawn to a purple red color. The principal quarries are along the Strait of Northumberland from Merigomish to the Joggins, in Cumberland County. These quarries are situated near railway and water transport, and are worked to some considerable extent.

Freestones have also been quarried in Cornwallis, Horton, Kennetcook, and in Cape Breton. The Millstone Grit likewise has been drawn upon for a yield of building material.

Granite is very abundant among the older rocks of the province along the Atlantic coast. It has been quarried extensively near Halifax and at Shelburne.

In the Cobequids there are masses of flesh and red colored syenites which have yielded handsome polished specimens. Similar stones are found in various parts of Cape Breton.

SANDSTONE, var. FREESTONE, Red. R. E. Chambers' quarry, Toney River, near Seafoam, Pictou Co.—Quarry opened by Mr. Chambers' about twenty years ago, but active operations were only commenced a couple of years ago. Ship at quarry wharf on Toney River, and at Rogers' siding, Oxford-Pictou branch I. C. Ry. Last year's output was about 700 tons, average price for dimension stone, $5.00.

SANDSTONE, var. FREESTONE, Grey. W. R. McKenzie's quarry, near Stillman, Six-mile Brook, off West River, Pictou Co.—Quarry opened over ten years ago by Robt. Elliott and then passed to Fraser & Cunningham. The stone is of a very fine grade and is sold chiefly for monuments, the price being about $8.00 per ton. It is worked by "plug and feather." Shipment by water is made at Pictou, and by rail at West River Station, both long hauls.

SANDSTONE, var. FREESTONE, Grey. Pictou Quarries Co., Pictou.—The quarry is located about 1½ miles from the centre of Pictou town. The stone is shipped by rail and water at Pictou, and generally sells for about $8.00 per ton for dimension blocks. Chief market is Nova Scotia and Prince Edward Island, and has been used in many buildings of note. One block of stone actually quarried measured 40 x 6 x 6 ft. and weighed 115 tons. The face is 55 feet deep, and the output to August, 1903, about 500 tons. Opened about 25 years ago by McKeen & Hogg. An analysis of the stone is as follows:—

Silica	74.97 p. c.
Alumina	10.27
Iron Oxide	7.02
Lime	2.42
Manganese	.31
Magnesium	2.70
Water	2.31
Organic matter	trace.
Total	100.00
Specific gravity	2.63

SANDSTONE, var. FREESTONE, Grey. W. Gammon (now H. C. Reid's) quarry, River John, Pict. Co.—This quarry has been opened about two years and is situated on bank of River John, and about a mile from the village. Shipped at Fitzgerald's siding, I. C. Ry. near by. Face about 10 to 14 high and 300 feet long. Has had a fair output, and sells for about $5.00 per ton for dimension stone.

SANDSTONE, var. FREESTONE, Brownish. Wm. Gammon's quarry, River John, Pictou Co.—This is close to the Gammon greystone quarry, and was opened about ten years ago. Similar remarks apply to both.

Sandstone, Red. Campbell's Quarry, Tatamagouche, Col. Co.—This stone has been used locally, and for railway work, but is said not to stand well where affected by water and frost.

Sandstone, var. **Freestone**, Grey. "Old Battye Quarry, Battye Brick & Freestone Mnfg. Co., Wallace Bridge, Cumb. Co.—The famous Old Battye Quarry was opened in 1809 by Wm. Scott of Halifax, who quarried there the stone used in building the Province Building at Halifax. From Scott the property passed to Mr. Seaman, of Minudie, and then to Tom Battye, of Wallace, then to Fred Battye & Co., then to Geo. Battye, and finally in 1900 the present company was formed. Besides being used in the Province Building, the stone has been employed in erecting the Bank of Montreal, Sydney, the Bishop's Palace and Prowse's Block, Charlottetown, and many buildings in Boston, Baltimore, New York, Providence (R. I.), Montreal, Halifax, etc. Also used in many bridges. The beds dip 25° to N 50° W. Quarry is at present idle, but expects to open next year with improved machinery. Two acres of stone are worked out, but the company has about 40 acres of quarry land yet. The clay cover got very heavy, making "stripping" expensive, but this is now being utilized in making excellent brick.

Sandstone, var. **Freestone**, "Olive" and "Blue." Wallace Stone Co., Wallace, Cumb. Co.—This well known quarry was opened 40 or 50 years ago by Wm. McNab. Afterwards operated by Wallace Huestis Greystone Co., and Wallace Greystone Co. With it is now incorporated a quarry opened about 20 years ago by Mr. Battye, afterwards known as the Dobson Quarry. The stone of the Wallace Stone Co. is fine grained and of excellent quality, and has long been favourably known. The area of quarry as opened is roughly about 600 x 600 feet, the rock face is about 50 ft. deep, and the bedding is nearly horizontal. A very large and improved plant and a large number of men are now employed here, part of the quarry being leased to M. J. Haney for a special contract. The latter has placed a gravity track to the wharf on Wallace Harbour, about a quarter of a mile distant. There is about a two mile haul to the railway. The average output in the past has been about 1,500 quarry tons, but for the last couple of years has doubtless many times exceeded that. A large amount is shipped to the United States and Canada as well as used in the province. Average price of dimension stone is about $5 per ton.

Sandstone, var. **Freestone**, Reddish. Oakley Myers' "Northport Redstone" quarry, Cold Spring Head, Amherst Shore, Cumb. Co.—The face of this quarry is about 35 ft. deep and 100 ft. long. The stone is lightered to Pugwash, where Mr. Myers has a storage yard. Average price per ton about $4.50 on board car at Pugwash. The post office at Springhill is entirely constructed of this freestone, and it is also partly used in the Royal Bank at Sydney and in some portions of the new Custom House at Halifax.

SANDSTONE, var. **FREESTONE**, Grey. John J. Fraser quarry, Rockley, River Philip, Cumb. Co.—Stone has been raised at this quarry for about 15 years, and the face is now said to be about 20 ft. depth and 75 ft. in length, The nearest shipping point is Pugwash, to which it is lightered. The price of average stone is about $4.50 per "stone ton" of 14 cubic ft., on car at Pugwash. The stone has been used in Sydney, St. John, Parrsboro, New York, etc. The quarry is at present leased by O. Myers.

SANDSTONE, var. **FREESTONE**, Greyish-brown. Edward Curran's quarry, Amherst, Cumb. Co.—This quarry was opened in the spring of 1902 and now has a face of about thirty-five feet.

SANDSTONE, var. **FREESTONE**, Red. Amherst Redstone Co., (J. Donald quarry), Amherst, Cumb. Co.—This quarry has been opened about fourteen years and now has a face of about 60 feet. Its area is about 150 x 150 feet. From 20 to 40 men are employed, and the stone is worked by steam derricks, Rand drill and Ingersol trencher. The stone which has gained much favour has been marketed from Halifax to Toronto and also in Massachusetts. The Roy Building, Halifax, is built of it, as will also be the Halifax Customs House now in course of construction.

SANDSTONE, var. **FREESTONE**. Brenton Beckworth's quarry, Kelly Brook, Kellyville, about 3 miles from Hantsport, King's Co.—This quarry furnishes a building stone which is a good deal used locally, and is at present being used in trimmings for the new Middleton schoolhouse. About 300 or 400 tons have been quarried this year.

SANDSONE, var. **FREESTONE**, Brown-red. S. W. Churchill's property, Walton, Hants Co.

SANDSTONE. Daniel McLean's quarry, Hardwood Hill, Sydney, C. B.—Used locally for foundations and also in a few instances for trimmings.

GRINDSTONES. Atlantic Grindstone Co., Lower Cove, Cumb. Co. —This quarry has produced grindstones since 1790, and they are of a very superior quality. Many years ago the output was sometimes 5,000 tons annually. The present company bought the property from R. L. Hibbard in 1901, and erected a large new plant, including 6 gang saws for cutting stone into different widths, turning lathes for finishing, tram cars, etc. This plant has a capacity of 10,000 to 15,000 tons annually. The company owns 300 acres and the quantity of stone is unlimited. Some of the best grits are quarried under the tide at low water. The stone is extracted by open quarrying, but it is proposed to undermine as is done in other places with success when the cover is heavy. Grindstones are made by the company from 5 pounds to 4 tons in weight. A large part of the output has been exported to the United States. Machinery is to be installed at an early date to manufacture oil-stones, scythe-stones, kitchen-stones and whet-stones.

SCYTHE-STONE. Lower Cove, Cumb. Co.—It is reported that scythe-stones are not at present manufactured here, but were recently and will be shortly. The stone is well adapted for such use.

GRANITITE (" Red Granite "). Cape Breton Red Granite Co.'s (H. F. McDougall's) quarry, Barachois Station, foot of Boisdale Hills, C. B. Co.—This stone has been so far used only in crushed form as " McAdam " for roads, and as such has been very largely used in the neighboring towns. Two steam crushers are in use and from 55 to 60 men employed.

GRANITE. Shelburne, Shel. Co.—A large amount of granite exists in this locality and has been quarried and largely utilized in building and for street paving-blocks. It is of finer grain than the Halifax granite. The Herald Building at Halifax is constructed of this stone.

GRANITE. John Kline's quarry, near Nictaux, Annapolis Co.—This is a very fine grade of granite which is much used for monumental work. It takes a fine polish, is of a dark color, and shows great contrast when cut.

GRANITE. John Kline's quarry, Witherod Lake, North West Arm, Halifax Co.—This well-known quarry has been worked for a number of years and a very large quantity of excellent stone has been taken out and used for buildings and monuments. Mr. Kline has an excellent plant for sawing, cutting and polishing this stone.

FIRE CLAY.

FIRE CLAY. Acadia Coal Co., Albion Mine, Stellarton, Pictou Co.—This clay is directly overlying the 4 ft. seam of coal and is from 30 to 40 ft. thick. It has been utilized in the manufacture of fire brick.

ALTERED FELSITE (suitable for Fire-Clay). Mill Brook, East Branch of Watson Brook, Coxheath Hills, C. B. Co.—Formerly Rev. M. A. McPherson's property, now N. S. Steel and Coal Co's. Is at present being developed. A series of experiments conducted in the laboratory of the Geological Survey of Canada has shown this material to be well adapted to the manufacture of fire-bricks when mixed with from ½ to 1 per cent. of lime. Composition: silica 76.260, alumina 19.152, iron oxide, trace, lime .555, magnesia .170, alkalies .259, combined water 4.300. (See reports Geol. Surv.).

ALTERED FELSITE (suitable for Fire-Clay). McIntyre property, Coxheath Hills, C. B. Co.—Contributed by T. Routledge, Sydney.

CLAY AND BRICKS.

Brick Clays are found in many places, the best known fields being those of Shubenacadie, Hantsport, Annapolis, Stellarton, Pugwash and other points in Cape Breton. When these clays are properly tempered they yield a good and strong brick.

CLAY AND BRICKS. Mira Brick Co., Mira River, C. B. Co.—Situated about 3 miles from Mira Gut. The clay worked is said to be the same from which the French made bricks for Louisbourg. The clay bank is said to be 45 feet deep. The top, for from 2 to 4 feet, is of red color, but below that the clay is of a bluish tint. Steam power is used, the bricks dried in the air on "hacks" and fired in ordinary kilns. Lighter to Mira Gut for shipment.

"SILICATE BRICK." (Sand-lime Brick). Manufactured from North Sydney silica sand and New Brunswick lime. C. B. Silicate Brick Co., North Sydney.—This is a new industry in Canada of which much is expected. The bricks are moulded from a mixture of sand and lime and are then placed in a steamer where they are subjected to steam at a pressure of 130 lbs. per sq. inch for from 9 to 10 hours. As a result of this a cement is chemically formed which under proper conditions is very strong. The bricks can be tinted any color, but at present the company only produces a grey brick of a very pleasing tint. The process is known as the Oscar Hugo Anderson patent. It is a German invention and the manufacture of similar brick as well as building stone is assuming large dimensions in Germany and Sweden. The present company started to manufacture in December, 1902, being the first factory of this kind to operate in Canada. The output with the present plant is from 6,000 to 7,000 per day. A large building is now being erected in North Sydney with the brick.

CLAY AND BRICKS. International Brick and Tile Co., Bridgetown, Annapolis Co.—The samples show pressed brick as well as a pattern known as "bull-nose," suitable for round corners, windows and door jambs.

CLAY AND BRICKS. Eastern Canada Brick and Tile Co., Sylvester, Pictou Co.—The yearly output of these kilns is between 2 and 3 millions. Steam pugging mill is used and side cut 6-brick machine; bricks dried in air and kilns of ordinary construction.

CLAY, SAND AND BRICKS. Maritime Clay Works, Pugwash, Cumb. Co.—This is usually spoken of as the best brick making plant in the province. A kiln of the ordinary kind was operated here about four years ago, but in 1900 an improved, permanent, "continuous kiln" was started, after plans forwarded from Los Angelos, California. Placing the unburnt bricks, firing, and removing the finished product goes on continuously in one long chamber, the parts being ingeniously separated by a partition of ordinary wrapping paper, which is defended from combustion by the course of the drafts until another compartment is filled and ready for firing, when the draft is cast through the partition and destroys it. Coal, fed from above, is used in firing. The pugging-mill, wire-cut, and other machinery is driven by steam, and the dry house is steam-heated. The company owns its own locomotive, tip-cars, and narrow-gauge railway to its clay bank on the Pugwash River. The capacity of the works is said to be 38,600 bricks per day, clear of "smash-ups." The capacity of the kiln is 400,000, if filled, which is not possible in the continuous system of operating. The samples show the clay, with the sand used as a binder, a soft mud brick as it comes from the machine, and five stock bricks as supplied the trade.

CLAY AND BRICKS. "Old Battye Quarry," Battye Brick & Freestone Mfg. Co., Wallace Bridge, Cumb. Co.—This company started in 1900 to manufacture bricks from the 30 ft. bank of clay covering their stone. The first year two millions were made, the second year 2,800,000, and the third (present) year the output is expected to reach nearly 5,000,000. Only stock brick are manufactured. 650,000 brick are now on hand. The machinery is all driven by steam and is of improved type, and the dry house is steam heated. At present "fire" in two ordinary kilns but expect soon to erect a "down-draught continuous kiln," and next year will probably make pressed brick. The brick sells for $6.00 per thousand on board cars at Wallace Bridge station, I. C. Ry. The company has a 2200 ft. siding and spur connected with the Oxford & Pictou branch of the I. C. Ry., about a quarter mile eastward of Wallace Bridge station.

MOULDING SAND.

MOULDING SAND. Conn's Mills, Cumb. Co.—This sand, which is found near R. Chestnut's farm, about three miles from Conn's Mills station, I. C. R., is controlled by the Amherst Foundry Co., which reports it very good for furnace castings, light machinery work, etc., but not fine enough for stove work. It is sold for $1.25 per ton f. o. b. at Conn's Mills. The deposit is said to be rather shallow.

MOULDING SAND. Dill's farm, near Windsor, Hants Co.—This sand has been occasionally used by the Windsor Foundry & Machine Co.

MOULDING SAND. Murray's sand bank, Avondale, Pict. Co.—This sand is used altogether for moulding at Fraser Bros. Foundry, New Glasgow, and is found to be of good quality. It is marketed in various parts of the province.

MISCELLANEOUS.

PYRRHOTITE (Magnetic Iron Pyrites), Nickel Ore. Rev. M. A. McPherson's property, George River Mountain, C. B. Co.—Deposit reported to be large, running in form of a vein for over 3 miles. The nickel contents have not been reported, but if sufficiently large would probably be worth attention as a source of nickel.

TALC, var. **SOAPSTONE**. Soapstone mine, Brigend Brook, about 3 miles from Whycocomagh, Inver. Co.—This deposit was worked about seven years ago by R. P. Fraser and also possibly by others. The stone was obtained from a shaft on the side of the road, and a quantity of the material extracted. It is now unworked.

CELESTITE. Dominion Steel Co's Dam, Sydney River, C. B. Co.—This mineral, which is an ore of strontium, occurs in a 12-inch bed at this place, the only locality in the province. Strontium is used in producing a crimson light in pyrotechny.

DIATOMACEOUS EARTH (Tripolite). Fossil Flour Co., Bass River, Col. Co.—This company for some years, has been preparing for the market a large deposit of diatomaceous earth occurring in a lake bed. The samples shew two qualities.

PAINTS. Hydrated oxides of iron and manganese occur frequently in Nova Scotia. Some small use has been made of them for paints, but the demand is principally met by a cheaper imported article.

Among other minerals that are known to occur in the province but which have not as yet been found in amounts of economic importance may be mentioned sulphur, in the form of common and magnetic iron pyrites, molybdenum, cobalt and nickel, zinc; tin, phosphates, and salt (as brine).

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Page 4, 3rd line from bottom, for 37.008 read 57.008

Nova Scotia.

Deep Gold Mining.

Report on the best methods of testing the value of the deeper Gold Deposits of Nova Scotia.

BY

E. R. FARIBAULT, C. E.,
Geologist of the Canadian Geological Survey.

Printed by order of the Government of Nova Scotia.

THE COMMISSIONER OF PUBLIC WORKS AND MINES, KING'S PRINTER.
1903.

MINES OFFICE, HALIFAX, AUG. 20, 1903.

The Honourable Arthur Drysdale, K. C., M. P. P., Commissioner of Public Works and Mines,

SIR,—I beg to hand you herewith the text of an Act passed at the last session of the Legislature, entitled " An Act to encourage Deep Mining in the Gold Fields of Nova Scotia," being Chapter 9 of the Acts of 1903.

WHEREAS, it is desirable that deep mining should be encouraged in the gold fields of Nova Scotia:

Be it therefore enacted by the Governor, Council, and Assembly, as follows:

1. The Governor-in-Council shall and they are authorized to appropriate a sum of money sufficient to assist in the sinking of not more than three deep shafts in the gold fields of the province.
2. Such shafts shall be sunk in such places as may be determined upon by the Governor-in-Council, and shall be under the direction of the Inspector of Mines, and the sinking shall be under such regulations as may be made by the Governor-in-Council.
3. The Governor-in-Council shall only assist in the sinking of a shaft below 500 feet from the surface, and to a vertical depth not exceeding 2000 feet, and in such assistance the government shall not bear more than half the expense of the actual sinking.
4. The Governor-in-Council is authorized in carrying out the objects of this Act to enter into arrangements with any mining company, corporation, or person carrying on the business of gold mining, or with any person, firm or corporation that may hereafter enter into the business of gold mining.

The subject of the working of gold mines in Nova Scotia to depths commensurate with those reached in gold districts in other countries, has for some time received the consideration of your honourable Government. Hitherto the practice of local mining enterprise in this Province has been to work out such pay streaks or rich portions of veins as happened to show on the surface, and then to abandon the veins. This system of mining, however pardonable in the beginning, is inexcusable in view of the present advanced knowledge acquired by mining operations throughout the world.

Hundreds of gold mines, deep and profitable, have shown that gold is not a surface mineral, but follows copper, lead and other minerals to depths which, if not quite beyond reach, are inaccessible by ordinary working.

As the Canadian Geological Survey had for many years devoted much attention to the accumulation of the facts connected with gold mining in this Province, and had placed their work in the hands of Mr. E. R. Faribault, Geologist to the Survey, it has been deemed advisable to utilize the intimate knowledge this gentleman has acquired of our gold fields.

After procuring authority from the Legislature of Nova Scotia, Mr. Faribault, with the permission of the Director of the Canadian Geological Survey, has prepared a preliminary report. In this he presents the facts he has collected and given in fuller detail in the publications of the Survey, which show the presence of bodies of gold bearing quartz deeper than any hitherto mined.

In view of the importance of the subject of deep gold mining to the Province, this report of Mr. Faribault's is now printed for distribution among those interested in gold mining. It is believed that the facts and deductions presented by Mr. Faribault will be new and of interest to many, and to those familiar with his reports their presentation in a concentrated form will be of service.

The report is issued in the belief that it will assist companies and individual operators in considering the subject, and in arriving at a clear understanding of the localities best suited for deep sinking and for assistance on the part of your honourable Government.

I have the honour to remain,

Yours obediently,

E. GILPIN, Jr.,

Deputy Com. P. W. & M.

Deep Gold Mining In Nova Scotia.

By E. R. FARIBAULT.

Possibility of Deep Mining Demonstrated by the Geological Survey.

The knowledge now gained by a detailed survey of the principal gold districts of Nova Scotia proves conclusively :

That the veins which coincide with the stratification and outcrop at the surface are the remnants of north or south legs of superimposed "saddle-veins" occurring on anticlinal folds, the apices of which have been truncated by extensive denudation.

That these saddle-veins are underlaid by a succession of other superimposed saddle-veins which do not out-crop at the surface, but occur deeper down on the axis-plane of the anticlinal folds.

That all the mining done for the last forty years has been confined to the saddle-veins outcropping at the surface, and the richest and most workable portions of these are now mostly exhausted. It is therefore desirable that the succession of underlying saddle-veins should be developed in depth, as it affords an extensive field for deep gold mining.

Analogy of the Bendigo Saddle-Reefs.

From the analogy of the gold-bearing saddle-reefs of Bendigo, Australia, occurring in a similar manner and profitably operated to depths reaching four thousand feet, it may be inferred that the Nova Scotia underlying saddle-veins will be found as large in size and as rich in gold as those cropping at the surface.

Deep Mining Proved by Actual Practice.

It is difficult, however, to induce capitalists to invest money in such extensive mining developments in Nova Scotia, unless similar undertakings have already proved successful in actual practice. It is therefore very gratifying to know that the recommendations of the Geological Survey have already been put into practice at the Doliver Mountain, Richardson, Bluenose and Dufferin mines; and although the developments are as yet limited the results obtained are most satisfactory and conclusive, and testify to the accuracy and value of the work done by the Survey. They prove that auriferous saddle-veins may be found to recur underneath one another to even greater depth and in much closer succession than in Australia, and what has been accomplished at these mines can also be done in many other districts in the Province where the conditions are favourable.

Appendix (A) gives some observations and sectional plans by the writer, taken from the summary report of the Geological Survey for 1902 (to be published this month) on the important developments recently made on the arch-core of the anticlinal folds at the Bluenose, Dufferin, Richardson and Doliver Mountain mines.

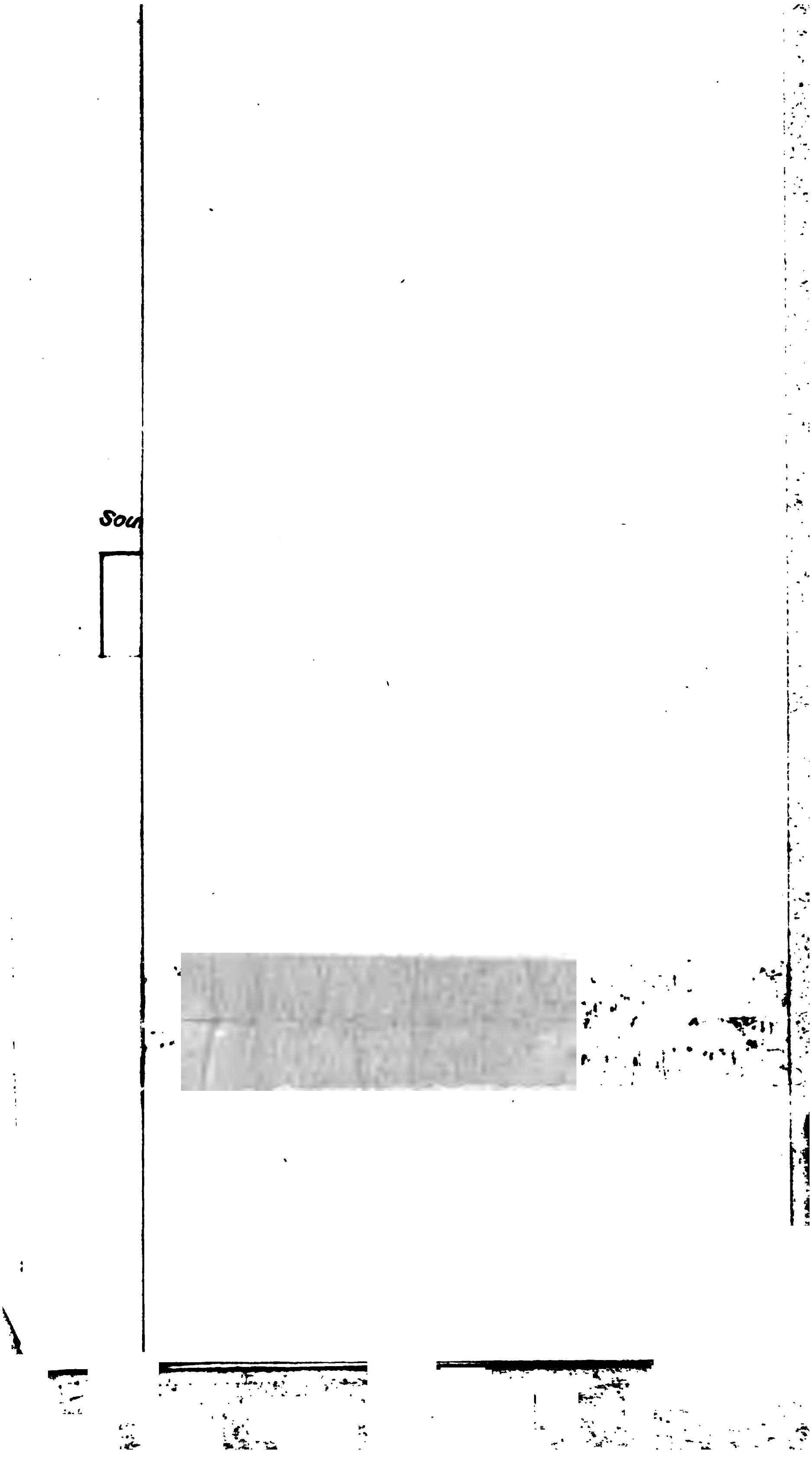
Opportunity for Government Aid.

The time is opportune, and it is desirable that the Provincial Government should encourage deep gold mining in Nova Scotia, by assisting in the development and testing of the underlying saddle-veins and prove conclusively in actual practice their recurrence and value to great depths. An Act recently passed by the Provincial Government authorizing an appropriation to aid in the sinking of three deep shafts to depths reaching 2000 feet is most welcomed by those who have a knowledge of the great possibilities of the Nova Scotia gold fields for deep mining. Such developments, if properly carried out, will be a good object lesson as to what may be accomplished at other mines; they will attract the attention of foreign engineers and capitalists, and will undoubtedly be the inauguration of a new era of extensive and permanent gold mining in Nova Scotia.

Conditions for Success.

The following observations are intended to indicate some of the means by which the objects contemplated by the above Act can be most economically and effectually attained. They may also be of service in encouraging a better general system of underground development, which will result in establishing gold mining in Nova Scotia as an industry more permanent than it appears to be under present methods.

To be successful it is absolutely necessary that the knowledge accumulated for the last twenty years by the work of the Geological Survey in the Nova Scotia gold fields and the vast experience gained in the Australian gold fields should be fully taken advantage of.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MR. C. K. LEITH'S TESTIMONY.

Mr. C. K. Leith, of the United States Geological Survey, who has reviewed in the Journal of Geology, Jan.-Feb., 1900, the writer's "Gold Measures of Nova Scotia and Deep Mining," concludes by saying:

"This work of Mr. Faribault will be of immediate practical advantage to mining men, some of whom have already testified to its accuracy and value. It is another instance, lately of frequent occurrence, of geological work done from a purely scientific standpoint having direct economic value.

"From a scientific standpoint also, the results are of interest as illustrating a principle of ore deposition. In many districts, and particularly in the Lake Superior district, it has long been known that ore deposits were partial concentrates in pitching troughs by descending water. Van Hise has lately enunciated the principle that the openings in arches or pitching folds are favourable places for the concentration of ore deposits by *upward moving waters*. The formation of the gold-bearing veins in Nova Scotia seems likely to have occurred in this way."

AUSTRALIAN DEEP MINES.

At Bendigo, Australia, fifteen mines are worked over 2,700 feet in depth, and eight over 3,000 feet; the deepest shaft on the Landell's 180 mine is over 4,000 feet deep. All these mines are operated on systems of anticlinal saddle-veins which do not outcrop at the surface, but have been developed successfully underneath one another by means of vertical shafts and by a series of cross-cuts and drifts driven every hundred feet (see cross-section of the Lazarus mine).

Much practical information may be obtained from the official reports of the Victoria Department of Mines at Melbourne, and other literature published on the subject in the transactions of the Australian Mining and Scientific Societies.

SELECTION OF MOST FAVOURABLE PLACES.

The success of deep gold mining in Nova Scotia depends above all on the selection of the most favourable districts and the proper location of the vertical shafts, and this can only be done after a careful study of the structure and conditions peculiar to each district, irrespective of any other consideration or influence.

CLASSIFIED LIST OF GOLD DISTRICTS.

It has been attempted, at the request of the Nova Scotia Government, in the following list to classify the different gold districts according to the geological structure and the size of the veins operated. (W. P. signifies that water-power is available.)

CLASS I.—SADDLE VEINS-

VERTICAL FOLDS:

(*a*) *Largest Saddle-veins:*

1 Dolliver Mountain..........W. P.
2 Richardson..........W. P.
3 Mooseland..........W. P.

(*b*) *Smaller Saddle-veins and legs*:

1 Tangier, centre (free claim)..........W. P.
2 Oldham..........
3 Caribou, on dome..........

INCLINED FOLDS:

(*c*) *Largest Saddle-veins:*

1 Goldenville, east end..........W. P.
2 Dufferin..........W. P.

(*d*) *Smaller Saddle-veins and legs*:

1 Fifteen Mile Stream, east end, 3 anticlines...W. P.
2 Moose River, north anticline..........W. P.
3 East Waverley..........W. P.
4 Killag

(*e*) *Largest leg-veins:*

1 Renfrew, Foundation group (faults)..........W. P.
2 Goldenville, south dip at centre..........W. P.
3 West Waverley..........
4 Wine Harbor, east end..........
5 Mount Uniacke, centre..........
6 Gold River, Gammon leads..........W. P.
7 Beaver Dam..........W. P.
8 Cochran Hill, Mitchell group..........
9 Harrigan Cove, immediately south of south anticline..........
10 Lawrencetown, immediately south of north anticline..........W. P.

(*f*) *Smaller leg-veins:*

1 Montague..........W. P.
2 Goldenville, centre of Wellington zone......W. P
3 Wine Harbor, centre..........

4 Molega .... W. P.
5 Isaac's Harbor, Mulgrave zone ....
6 Lake Catcha .... W. P.
7 South Uniacke ....
8 Harrigan Cove, St. Anthony zone ....
9 Country Harbor ....
10 Kemptville ....
11 Whiteburn ....
12 Forest Hill ....
13 Mill Village .... W. P.
14 Gold River, south dip .... W. P.
15 East Rawdon ....
16 Miller Lake (Liscomb) .... W. P.
17 Pleasant River ....
18 Brookfield ....
19 Crow's Nest ....
20 South Stewiacke ....
21 Gold Lake (Scraggy Lake) ....
22 Head Chezzetcook .... W. P.
23 Moosehead ....
24 Carleton ....
25 Ovens ....
26 Ardoise ....
27 Leipsigate ....
28 Liscomb Mills .... W. P.
29 Indian Path ....
30 Vogler's Cove ....
31 McKay Settlement ....
32 Gegoggin ....
33 West River, Sheet Harbor ....

SUBORDINATE CRUMPLES:
1 Isaac's Harbor, North Star and Hurricane Point crumple ....
2 Mt. Uniacke, West Lake crumple ....
3 Gold River, Vermilion lead crumple ....
4 Ecum Secum, Cameron lead crumple ....
5 Lawrencetown, Shanghai and Bennett crumple.

CLASS II.—FISSURE AND CROSS VEINS.

1 Brookfield, Libbey's ....
2 Caribou, lake lode (Getchell's) and others ......
3 Leipsigate ....
4 Central Rawdon, Cope lode and others ....

5 Blockhouse..

6 Cow Bay...

7 Oldham..

8 Lake Catcha.......................................

9 Vogler's Cove.....................................

10 Ardoise...

11 Fifteen-mile Brook................................

FISSURE AND CROSS-VEINS.

In the above list the gold districts are divided into two distinct groups according to the class of veins operated, namely, *Class I, the saddle-veins*, following the planes of stratification along the crests of anticlinal folds, and *Class II, the fissure or cross-veins*, crossing the measures at various angles. The veins of the former class have hitherto been the principal source of the gold production, and they offer an extensive field for deep mining. A few of the fissure and cross-veins have also proved good producers, but they should not be considered in the present selection of a district for deep test-shafts; for, a deep shaft might prove the continuation of a chute of pay-ore within *one fissure-vein* to a greater depth than it is worked at present and would necessarily benefit the company operating; but, beyond this it would develop nothing new and would not attain the object in view, viz: to prove the recurrence in depth of a *succession of numerous saddle-veins* as rich and large as those actually outcropping and being worked at the surface.

In a few gold districts, like Caribou, Oldham and Lake Catcha, productive fissure veins and saddle veins have been worked quite close to one another and sometimes crossing each other. In no case, however, is it found possible to locate a vertical shaft that would advantageously develop conjointly both classes of veins.

LARGE SADDLE-VEINS PREFERABLE.

It is acknowledged by the best authorities that the development of the gold-fields in Nova Scotia has been retarded by the persistence of the prospector in neglecting for years the problem of large supplies of low-grade ore in favour of isolated rich veins. It is believed that the districts presenting the largest workable saddle-veins offer the best prospects for permanent and deep mining and should receive the preference. The deepest mines in the Australian gold-fields are operated on the largest saddle-reefs.

VERTICAL AND INCLINED SYSTEMS OF SADDLE-VEINS.

In locating a vertical shaft for deep mining, the dip of the anticlinal axis has to be taken into consideration, so that unnecessary cross-cutting may be avoided. In the case of a vertical fold (see cross section of Tangier) like (*a*) and (*b*) in the above list, a vertical shaft would run parallel with its axis-plane, and very little cross-cutting would be necessary if the shaft is properly located, as it will keep in the pay-zone all the way down. But if the fold is inclined as at Goldenville (see cross-section of Goldenville) the vertical shaft would necessarily approach or recede from the axis plane as it is sunk to greater depth, according to its position with reference to the fold; and the deeper the shaft the more cross-cutting will have to be done to develop the pay-zone. *Underground developments on vertical folds will thus require to be less extensive and will cost much less than on inclined folds, and they should generally receive the preference for deep mining.*

VEINS IN CLOSE SUCCESSION.

For the same reason it is desirable that the saddle-veins should underlie one another in close succession, and on this point the Nova Scotia saddle-veins are more advantageous than those operated in Australia.

VALUE OF THE ORE.

The general value and character of the ore already extracted from the veins outcropping at the surface in a certain district should also represent a fair estimate of what the underlying veins may be like in that district.

WATER POWERS.

A district with a good water-power should also be given the preference over one where steam has to be used. The transmission of power by compressed air for short distances and electricity for longer distances has now been proved practicable and is being extensively used elsewhere, and it could be applied successfully at several gold districts in the province where important water-powers are lying idle on account of their being too far away to be utilized by other means. Now that gold mining is being established on a more permanent footing in the Province, it is desirable that more advantage should be taken of the water-powers, as this would greatly reduce the cost of operation.

CHOICE OF COMPANY.

A good, strong, bona fide mining company that has already given proof of its ability should be preferred to a new company with no practical experience in mining, or one being formed with the special purpose of taking advantage of the Government's offer, unless the engineer in charge is especially qualified for such undertaking, and the directors are good reliable business men.

LOCATING DEEP SHAFTS.

The proper location of a vertical shaft is even of more importance than the selection of the district, for in most districts a vertical shaft well located, with properly directed underground developments, may prove successful, while in the most promising districts the results may be otherwise if the shafts and developments are not well located.

IMPORTANCE OF CROSS-CUTS.

Second in importance to the location of the shaft, is the problem of properly planning out the system of underground developments to be carried out from each shaft, viz.: the direction and length of the cross-cuts and drifts to intersect the zone of pay-ore. It has been shown above that in the case of an inclined fold, much cross-cutting is required to intersect the pay-zone, otherwise the vertical shaft would be of little use. The necessity of cross-cutting is well shown in the section given of the vertical shaft sunk at Lazarus Mine, Bendigo.

CROSS CUTS UNDER CONTROL OF GOVERNMENT ENGINEER.

Thus to ensure success, the Provincial Government should retain the control of the underground developments, and it might be desirable that Government aid should be extended to necessary cross-cutting and drifts which might be driven at successive levels, a few hundred feet apart, as the case required, this to be determined by the Government engineer in charge.

TESTS.

The Government should also see that the veins intersected be carefully sampled and assayed and separate mill-tests made of the most promising, in order to determine the workable portions and pay-chutes. Such mill-tests should be under the direct supervision of the Government engineer, or some competent person appointed by him, who should take samples of the tailings at regular intervals during the mill run and have them assayed.

UNDERGROUND PLANS AND SECTIONS.

It is very desirable that the structure of the strata and veins intersected be recorded on a large-scale plan before the rock is concealed by the timbering of the shaft. A complete set of underground plans and sections should also be kept constantly up to date of the cross-cuts, drifts, winzes, rises, etc., showing the values, sizes and structure of the different veins opened up. Such plans would show the distribution of the workable ore-bodies within the area developed, and also assist in defining the direction and extent of the pay-zone and in laying out the development work.

It is believed that the Government should have a competent officer, especially appointed to superintend the sinking of the three proposed shafts, to make surveys and to keep plans of the underground workings in order to determine what cross-cuts, drifts, etc., should be made so as to properly develop the pay-ground.

E. R. FARIBAULT,
Geologist to the Geological Survey.

Ottawa, 24th July, 1903.

APPENDIX (A)

The following observations and plans are taken from the Summary Report of the Geological Survey of Canada, 1902, by E. R. Faribault (to be published this month) on the important development recently made on the arch-core of the anticlinal folds at the Bluenose, Dufferin, Richardson and Dolliver Mountain mines :

GOLDENVILLE.

BLUENOSE MINE.

Much credit is due to the late Mr. Simson A. Fraser for having first undertaken, and Messrs. Thos. Cantley and A. G. McNaughton for having executed so successfully at the Bluenose mine, a new system of mining development on the Goldenville anticlinal fold, which should be an object lesson for the gold miners of the province.

Transverse Section.

A detailed survey was made on October 15th last of the new developments, and a transverse section was prepared which is here reproduced on a reduced scale. The section is made through the main shaft on the Springfield belt, and along two cross-cuts driven north, one above the other, at the depths of 280 and 364 feet, and at a distance of 30 feet west of the main shaft. The upper cross-cut is 230 feet and the lower 250 feet long. They show the struc ture of the Goldenville anticlinal fold, with a subordinate smal flexure on the north leg, and disclose the recurrence of large auriferous *saddle-veins,* from the surface to below 364 feet.

The saddle-veins are remarkably well developed on the apex of the fold, where they attain a large size, and they continue downwards very regularly on both legs, the veins diminishing but little in size, more especially on the south leg, which goes to prove that they will extend to a great depth as well as parallel with the anticlinal.

Most of the veins developed have proved auriferous, and two of them, the McNaughton belt on the south dip and the Cantley belt on the north dip, have already been profitably worked.

McNaughton Belt.

The McNaughton belt measures 6 feet 8 inches in width at the upper level and 6 feet at the lower, and is composed of large irregular quartz rolls and stringers pitching westerly 15 to 22 degrees in slate and a few thin layers of whin. It has been opened 300 feet in length on the upper level and 500 feet on the lower, and the greater part of the block of ore between the two levels has been extracted by backstopping. A rise of 65 feet has been made above the upper level, where the belt has widened to 8 feet and 10 inches and begins to curve towards a saddle higher up. The official returns of the ore extracted from the McNaughton belt for the year 1902 are 11,211 tons, yielding 2,391 ozs. of gold, which is very satisfactory, considering the size of the vein.

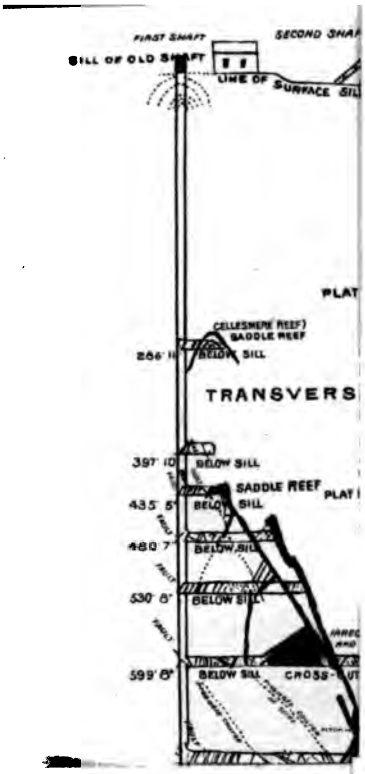
The Springfield belt was profitably worked to a maximum depth of 400 and a length of 900 feet, and is still found auriferous at the bottom of the main shaft, which is being sunk some 50 feet deeper for a third cross-cut to develop new saddles and backstope the McNaughton and probably the Faribault belt. The South Springfield belt was mined 113 feet in depth and 242 feet in length.

Pay Zone on South Dip.

As the McNaughton belt has been profitably mined almost to the apex of the fold, 145 feet above the lower level, we may conclude that the denuded portion of the Springfield belt, about 150 feet, has pay-ore, which added to the depths worked, 400 feet, would give a possible total depth of 550 feet of pay-ore on the south dipping leads. The McNaughton belt may therefore be expected to carry pay-ore for 400 feet deeper than the 364 feet level.

On the south dip the zone of pay-veins is thus 150 feet in width and lies immediately south of the anticlinal axis along which it extends to great depth, unless a change should be found in the structure of the fold, of which there is so far no indication.

In length the Springfield belt has been profitably worked for over 900 feet, and there is good reason to believe that if properly de-



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900 feet, and there is good reason to believe that it properly

veloped will be found to carry pay-ore for a much greater length and the McNaughton belt will probably be workable for as great a length. A continuous zone of pay-veins has been worked to limited depths all along the south limb of the Goldenville anticlinal fold, for a length of 4,400 feet from the Springfield to the Palmerston belt, beyond which development works have been prevented by the swampy nature of the ground. The surface developments are sufficient to prove that this zone affords a field of virgin ground, large enough for several mines like that operated by the Bluenose Company.

GEO. W. STUART'S NEW SHAFT.

Mr. George W. Stuart is also at present sinking a shaft on area 743, and 75 feet west of the open cut on the Palmerston belt, in order to develop the zone of pay veins, which has proved very rich in gold in this vicinity, by a system of cross tunnels and drifts at different levels.

Pay Zone on North Dip.

The developments on the north dip at the Bluenose mine have not yet been sufficient to determine the pay zone, but on the Cantley belt they show that the workable portions of the veins are restricted to certain parts of the subordinate flexure occurring on the north limb of the main anticline, and further developments will, no doubt, determine some well defined zones of pay-chutes pitching like the flexure, easterly 20°.

ROYAL OAK MINE.

The most regular and continuous pay-chutes worked in Goldenville were operated on the north dip. In the plan and report of that district published in 1897, three zones of pay-chutes are given: the Wellington, Hayden, and McRae lines of pay-chutes. In the Summary Report for the same year, page 109, referring to the Hayden line of pay-chute, I said: "A swamp lying north-west of the Little Hayden has, no doubt, prevented prospecting further north-west on this undulation, but there is every reason to believe that rich streaks occur there." It is gratifying to learn that this prediction has been fulfilled and several rich pay-chutes have since been developed with a great deal of skill by Mr. Wm. McIntosh, the superintendent of the Royal Oak Mine, and for the year 1902, 4310 tons of ore have yielded the handsome return of 2394 oz. 16 dwts. of gold.

SALMON RIVER GOLD DISTRICT.

Dufferin Mine.

A general description of the mining developments on the arch-core of the anticlinal fold at the Dufferin mine has already been given in the Summary Report for 1899, page 183, and a transverse section showing the structure of the saddle veins is now ready for publication. This section shows that a vertical shaft 420 feet deep with cross-cuts across the anticlinal fold at 134, 200, 315 and 420 feet levels, have developed a succession of superimposed saddle-veins which do not crop at the surface, five of which have been worked between the surface and the 315 feet level. This mine has been one of the best gold producers in the Province, 117,906 tons of ore treated having yielded 41,497 oz. 5 dwts. 20 grs. of gold valued at $788,448, giving an average of 5 dwts. 20 grs. per ton of 2000 lbs. Through one cause or another, the mine is at present idle, but will, undoubtedly, be taken in charge by some skilful mining engineer and developed intelligently and operated as successfully as before, as has been the case with several other abandoned mines lately reopened.

UPPER ISAAC'S HARBOUR GOLD DISTRICT.

A special plan of this district, also called Upper Seal Harbour, was made in 1897, and descriptive notes were published in the Summary Report for that year, in which it was pointed out, at page 106, that "large belts of low-grade ore, conforming with and similar to that of the Richardson vein, certainly occur along this fold, but they will only be found on the apex of the fold, along which more prospecting should be done, and this could be accomplished most readily and at least cost by sinking vertical shafts along the axis." This recommendation has since been successfully put into practice at the Richardson and Dolliver Mountain mines.

The production to date of this district shows 73,314 ounces of gold from 226,355 tons of ore treated.

Richardson Mine.

At the Richardson mine a vertical shaft was sunk 160 feet in depth, about 900 feet to the eastward of the cropping of the apex of the Richardson vein, intersecting at the depth of about 100 feet the south leg of an overlying saddle-vein giving ten feet of quartz and slate, which was developed at the depth of 160 feet by a drift 60 feet eastward and a cross-cut 84 feet long to the north leg, where it shows six feet of ore. The character of the ore and the structure of the saddle-vein is identical with that of the Richardson vein, but for some reason or other the work of sinking has been stopped. The property, however, has been acquired by a strong American Company, who contemplate important mining developments by means of a vertical shaft with up-to-date equipment, and alterations are already in progress. It is reported that the large cyanide plant is to be replaced by a new process of gold extraction and the 60 stamp mill improved and 20 more stamps added.

DOLLIVER MOUNTAIN MINE.

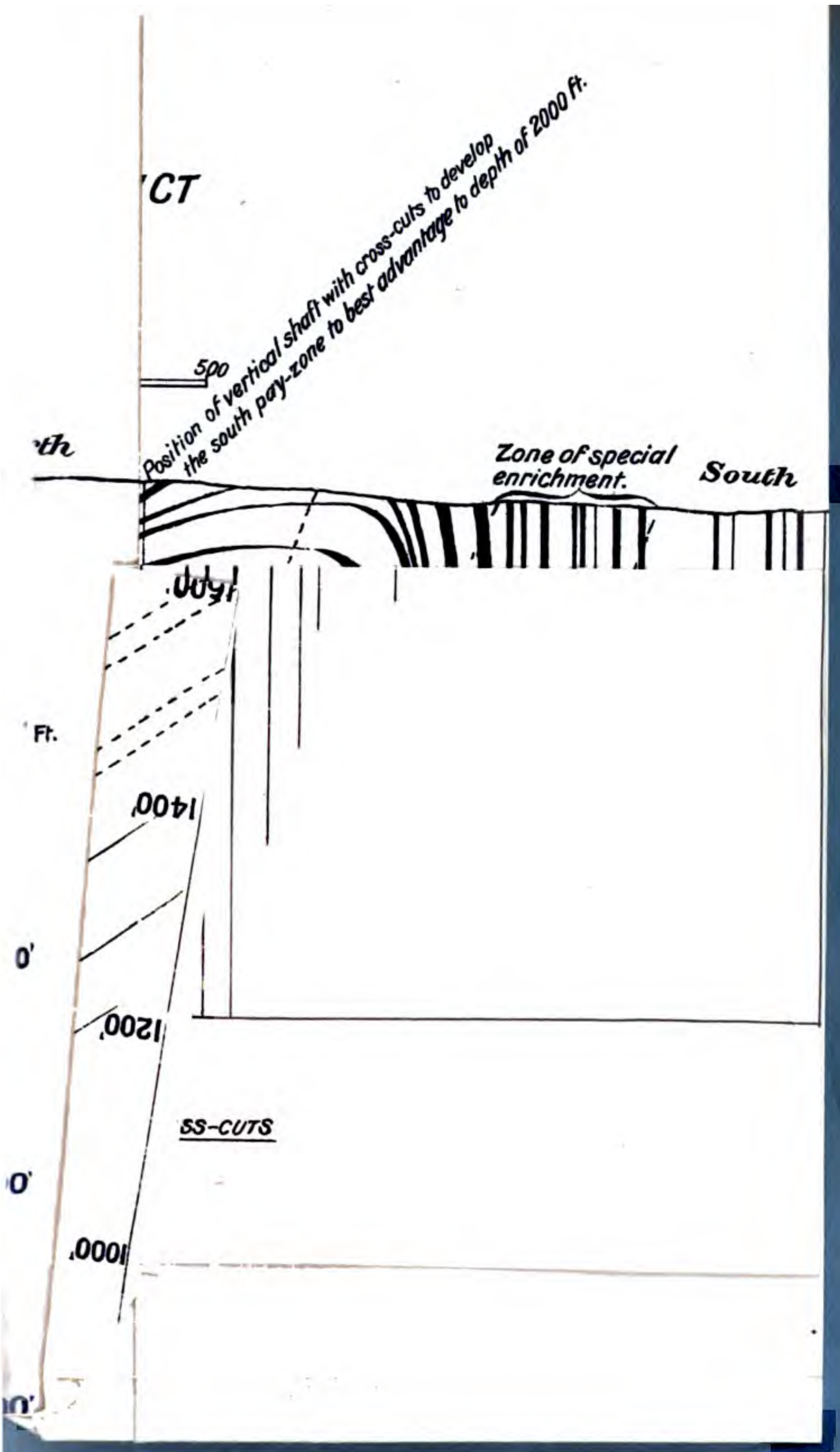
At Dolliver Mountain, on the same anticline and one mile west of the Richardson mine, Mr. G. J. Partington has, during the last two years, developed in a very skilful manner a succession of large saddle-veins similar to the Richardson.

The exact position and direction of the anticline and the structure and value of three superimposed anticlinal saddle-veins outcropping at the surface were first ascertained by Mr. Partington. These are the Howard, Forge and Partington saddle-veins, measuring respectively 10, 30 and 33 feet vertically on the apex, the former pitching eastward 12° and the latter 16°.

Vertical Shaft.

A vertical shaft 17 ft. 6 in. by 5 ft. 3 in. in the clear, was then sunk on the anticline, on area 774, at a distance of 400 feet eastward of the cropping of the Partington belt, to intersect the three saddle-veins as well as others underlying at their apex. After going through 55 feet of quick sand, small veins were intersected at depths of 55, 92 and 102 feet, which, although not apparently of workable size, proved the shaft to be exactly on the apex of the fold. At the depth of 130 feet the Partington saddle-vein was intersected. It measures about 33 feet in thickness on the apex, is being developed on the north and south legs, and has yielded about 6000 tons of auriferous ore, highly mineralized, composed of rolls' bunches and stringers of quartz running through a belt of slate and resembling much that of the Richardson mine.

The shaft was on May 25th, 257 feet deep and the company is wisely continuing sinking without interruption, until 1000 feet has been reached. It will thus intersect successively the Forge and Howard veins and a great number of other new underlying saddle-veins, on the apex of the fold, where they are of greater size and value.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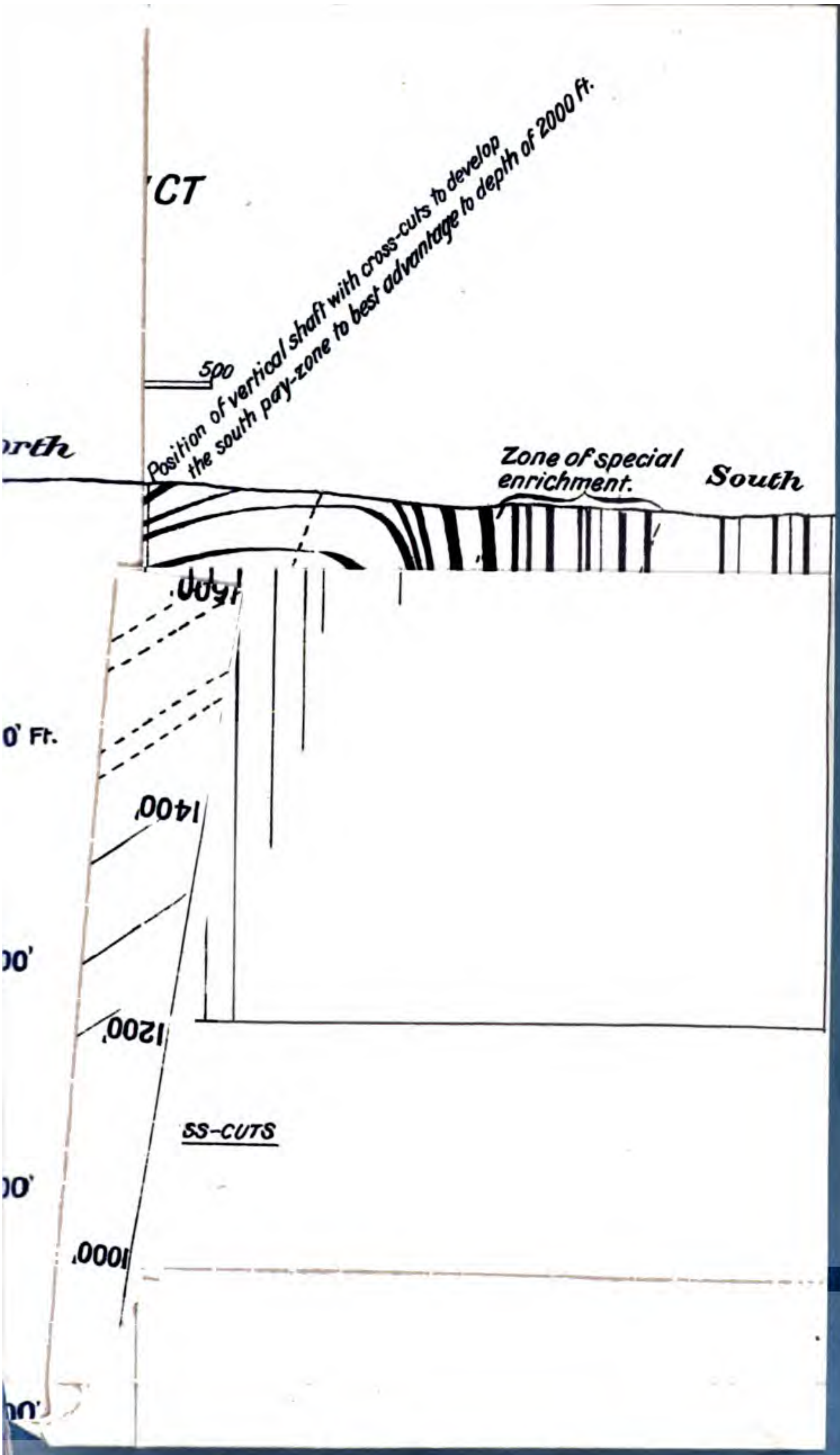
Plant.

The company is erecting a large modern plant, and they have a fine water-power at the head of the tide on Isaac's Harbor River, capable of generating 750 H. P. The power is transmitted to the mine by electricity, where an electrical hoist and a fifteen-drill air compressor have been installed, and an eighty stamp mill in which forty stamps are to be used at once.

Developments Based on the Structure.

These operations are well worth recording as the first instance in Nova Scotia where a series of saddle-veins has been systematically developed, with due regard to its geological structure and a proper knowledge of its possibilities for extensive and permanent mining. What has been accomplished at the Doliver Mountain mine can also be done along Upper Isaac's Harbour anticlinal fold and in many other districts in the Province where the conditions are favorable.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